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ABSTRACT

This Technical Paper focuses on the new PLATO[R] reading curricula which represent an innovation in the computer-based teaching of basic reading skills and advanced reading comprehension strategies for adults and young adults in secondary and postsecondary academic settings, as well as adult/job skills training. The first section is divided into two parts. The first part describes what may be termed the cognitive-constructivist view of reading, the prevailing view of the reading process influencing education. The second part of this section describes several concepts that elaborate on and complement that view, concepts which are particularly important when teaching reading. The second section focuses on the need for new curricula in secondary and post-secondary reading, and provides a brief overview of governmental standards. The third section gives an overview of components in the PLATO[R] curricula in reading, and how they fit together. There are five series: Essential Reading Skills (ERS); Reading Strategies; Advanced Reading Strategies (ARS); Vocabulary and Reading Comprehension; the Vocabulary Builder Editor; and Reading for Information (RFI). The following sections discuss each of the five in greater detail, describing the course structure and instructional design for each. The final section discusses teaching with the PLATO[R] reading curricula. Appendixes include a list of acknowledgements and a table with information on reading products discussed in this Technical Paper. (Contains 15 references.) (AEF)

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PLATO®

Teaching Reading with PLATO

An Overview of the New PLATO Reading Solution and How to Use It
Technical Paper #7

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Table of Contents

Table of Contents 2

Executive Summary 4

A Contemporary View of the Reading Process Mike Graves 6
The Cognitive-Constructivist View of Reading 6
Concepts That Elaborate and Complement the Cognitive-Constructivist View 9
References 12

The Need 14

The need for new curricula in secondary and post-secondary reading 15

The Influence of Standards 16
Alignments to Tests 18

An Overview of the PLATO Curricula in Reading 19

Essential Reading Skills 25

Course Structure 25

Instructional Design 27

Fundamental and Intermediate Reading Strategies 29

Course Structure 29
Using word parts to infer word meanings 30
Using the dictionary to determine or verify word meanings 30
Using prior knowledge 30
Discriminating between Fact and Opinion 30
Asking and answering questions 30
Making Inferences 31
Determining what is important 31
Summarizing 31
Dealing with graphic information 31
Imaging and creating visual representations 31
Monitoring comprehension 32

Instructional Design 41

Vocabulary and Reading Comprehension 43

Curriculum Structure 43
Vocabulary and Reading Comprehension – Narrative passages and stories and Literature 43
Vocabulary and Reading Comprehension – Information and Expository Text 46

Instructional Design 48

Reading for Information 51

Curriculum Structure 51

Instructional Design 52

Advanced Reading Strategies 54

Curriculum Structure 54
Course 1: A Reading Strategy 56

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Course 2: Building Reading Skills ____ 56
Content Area Courses ____ 57

Instructional Design Strategies ____ **58**

Teaching with PLATO Reading ____ ***60***

Appendix A: Consultants ____ ***65***

Appendix B: Reading Products Discussed in this Document ____ ***67***

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Executive Summary

The new PLATO reading curricula represent an innovation in the computer-based teaching of basic reading skills and advanced reading comprehension strategies for adults and young adults in Secondary and Post-Secondary academic settings, as well as adult/job skills training. Taken together, the curricula comprise over 335 hours of true computer-based, highly interactive personal instruction, practice and assessment, delivered via CD-ROM, Local Area Network or the Internet.

The reading curricula are based on an extensive analysis of requirements in national and state curriculum standards and tests used in the United States, Canada, and the United Kingdom, backed up by an expert synthesis of recent cognitive research on reading. Advisory panels consisting of nationally recognized specialists in reading and measurement, curriculum specialists from school districts, post-secondary educators and adult learning specialists guided the planning of each curriculum. Key design decisions were tested on actual learners by using rapid prototypes during design and development.

At the core of the PLATO reading solution is instruction on cognitive strategies for reading comprehension, taught at three levels in four curricula. Supporting this core is instruction on specific reading skills and vocabulary, taught in two curricula. The strategies taught include inferential strategies for vocabulary and passage comprehension, as well as detailed strategies for reading in the content areas and reading document types commonly found in workplace settings. Extensive graded practice in comprehension is included from grade levels 3 through 14, with over 300 passages of 300 to 1,500 words in length. In addition, the PLATO reading solution includes direct instruction in pre-reading vocabulary, study skills, and test-taking skills. Extensive audio supplement and support is

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especially helpful to less advanced readers, including ESL learners and those with learning disabilities. A complete dictionary is integrated into each course and can be used to look up any word. The curricula for college-level and specialized workplace reading skills also includes a multimedia glossary which accompanies passages using technical or unusual terms. In two curricula, offline, print-based reading and writing activities are included for additional practice to build retention, automaticity and transfer.

Through the PLATO *Pathways* management system, instructors can construct custom curricula by assembling only those courseware components called for by curriculum standards, or those needed for a specific class, group or individual learner. Web-based and locally-produced resources and activities can be added. And, the powerful assessment system can be used to conveniently screen individual learners, automatically place them individually in the curricula, monitor their progress on an hour-by-hour basis, assure they study only what they need, and assess their level of achievement and readiness to take a prescribed standards test.

Development of the reading curricula required advancements in the state of the art of instructional design methodology and software technology. Underlying instructional theory is based on a state-of-the-art synthesis of cognitive research in learning and instruction. The Instructional Systems Design (ISD) methodology used applied principles of 4th generation iterative design and development, requiring the highest level of teamwork among specialists in reading, instructional design, graphics/multimedia, and object-oriented software engineering. User testing and validation was extensive, and evaluations and continuous product improvement are integral to the PLATO philosophy of product development. Taken together, the reading curricula represent an effort of well approximately 1,000 person-months, with maintenance and upgrades ongoing. We believe this level of investment in a true computer-based instructional solution for teaching of reading to adults and young adults is unprecedented in the industry.

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A Contemporary View of the Reading Process[1]

Mike Graves

This section is divided into two parts. The first part describes what may be termed the cognitive-constructivist view of reading, the prevailing view of the reading process influencing education.[2] The second part describes several concepts that elaborate on and complement that view, which are particularly important when teaching reading.

The Cognitive-Constructivist View of Reading

The Cognitive-Constructivist view of reading emphasizes that reading is a process in which the reader actively searches for meaning in what he or she reads. This view also emphasizes that this search for meaning depends very heavily on the reader's having an existing store of knowledge or schemata that he or she draws on in that search for meaning, and that the active contribution of the reader is significant enough to justify the assertion that the reader actually constructs the meaning he or she arrives at. The following three topics describe three key components of the cognitive-constructivist model – the cognitive orientation, schemata, and construct.

The Cognitive Orientation

The earliest and strongest influence behind this view comes from cognitive psychology, the psychological orientation that became the main point of view of American psychology beginning in the 1960s (Bransford, Brown, & Cocking, 1999; Gardner, 1985). Cognitive psychology can perhaps be best understood in comparison to behaviorism, which was the dominant psychological orientation in the United States from about 1930 to about 1970 and which had a huge effect on the reading instruction of that period and continues to have some influence today.

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[1] This section adapted from Graves, Juel, and Graves (1998, 2001) *Teaching Reading in the 21st Century* (1st and 2nd eds.). Boston: Allyn & Bacon, pp. 2-18. Used with permission.

[2] A number of cognitive scientists are currently dealing with "connectionist" and other recent conceptions of processing that differ from schema-based approaches. Thus far, these approaches do not appear to have influenced educational formulations and practices, and it is not clear that they ever will.

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Behaviorist psychologists viewed people as rather passive respondents to their environment and gave little attention to the mind and its role in learning. In the behaviorist view, reading was a rather passive process in which the information on a page of text was somehow absorbed by the reader as her eyes scanned the page.

Beginning in the 1960s, behaviorism began to be replaced by the cognitive orientation. Cognitive psychologists view the mind as central to learning and the study of learners' thought processes as a central focus of their work. They also view learners as active participants, who act on rather than simply respond to their external environment as they learn. In the cognitive view, reading is very much an active process in which the meaning the reader gleans from a text is heavily influenced by the cognitive work that he or she puts into the reading process. Both the beginning reader – who we might observe carefully sounding out words, and the accomplished reader, who appears to be effortlessly absorbing the contents of the material being read – are in fact actively engaged in making meaning from the text.

Schema

The concept of schema, the second influence on the view of the reading process described here, is closely related to the cognitive orientation. In fact, schema theory is one of the central concepts of cognitive psychology. Schema theory is concerned with knowledge, particularly with the way knowledge is represented in our minds and the importance of prior knowledge to learning something new. As described by the theory, knowledge is packaged in organized structures termed schemata. According to Rumelhart (1980), schemata constitute our knowledge about "objects, situations, events, sequences of events, actions, and sequences of actions" (p. 34). We have schemata for objects such as a house, for situations such as being in a class, for events such as going to a football game, and for sequences of events such as getting up – eating – showering – and going to work. We interpret our experiences – whether those experiences are direct encounters with the world or vicarious experiences gained through reading – by comparing and in most cases matching those experiences to an existing schema. In other words, we make sense of what we read and of our experiences more generally by a tacit process that in essence tells us "Ah ha. This is an instance of such and such."

Our schemata are related to each other and constitute a vast and elaborate network of interrelationships. To give just a very brief sample of the legion of interrelationships that exist, it's likely that your schema for house is related to your schema for neighborhood in that your house is part of your neighborhood, and it is related to your schema for family in that your family lives in my house; at the same time, your schema for house is related to your schema for teepee because both houses and teepees are dwellings.

One very important consequence of readers having these rich, internalized networks of schemata is that, once a particular schema is evoked, a huge store of knowledge becomes instantly available. Suppose someone is reading a story and comes across the sentence, "Mark stopped at McDonalds on the way home." Immediately, the schema for fast food restaurants provides the reader with a wealth of information – Mark ordered and picked up his food at the counter; he

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ordered something like a burger, fries, or a malt – not steak or lobster; he had to pay for it, but not too much; he seated himself or perhaps took his food somewhere else to eat it; and he probably ate it fairly rapidly. Information such as this, and often richer bundles of information, are available to us as soon as we evoke a schema for something we are reading, or hearing or viewing.

Right now, you are building a schema for schemata; and the more you learn about schemata, the easier it will be for you to learn even more about them. Both what we learn and the ease or difficulty of learning it are heavily influenced by our schemata. The more we know about something, the easier it will be to deal with that topic and learn more about it. Schemata assist the reader in initially making sense of what he or she reads, relating information newly acquired to prior knowledge, determining the relative importance of information in a text, making inferences, and remembering (Anderson & Pearson, 1984).

Constructivism

Constructivism, the third influence on the view of the reading process described here, has many roots and many branches (Anderson, Reder, & Simon, 1998; Phillips, 2000), being in fact a philosophical, political, and social construct as well as a psychological one. Here, we use the term in its psychological sense. Used in this sense, constructivism serves to emphasize a point already made and to introduce an additional point. Constructivism emphasizes the fact that comprehending a text is very much an active, constructive process.

Consider this metaphor of the constructivist view of reading. The author of a text, like the architect who draws a blueprint, has created a representation of her ideas. The reader, like the builder, must take this representation and construct something. Much like the builder must construct a house, the reader must construct meaning. Constructivists often use the phrase "making meaning" to emphasize the reader's active role in comprehending texts. Students cannot just passively absorb meaning from texts. A truly passive reading would leave the reader simply having turned the pages. Instead, readers must actively engage with the text, consider what they are reading, and link the information they are gleaning from the text with ideas, topics, and events they already know. Moreover, the more difficult a text becomes for students – the more new and challenging information it presents – the more actively engaged readers must be.

As just noted, in addition to emphasizing the active nature of reading, constructivism adds a new point to the view of the reading process outlined here: The meaning one constructs from a text is subjective, the result of that particular reader's processing of the text. Just as no two builders will construct exactly the same house from a blueprint, so no two readers will construct exactly the same meaning from a text. A particular reader's processing is influenced by the sum total of the reader's experience as well as by his or her unique intellectual makeup. Because of this, each reader constructs a somewhat different interpretation of the text, the text as he or she conceptualizes it (Fosnot, 1996).

Having noted that constructivism emphasizes the subjectivity of meaning, it's also important to note that different texts differ dramatically in how much they constrain meaning (Stanovich, 1994). An abstract poem may prompt many

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appropriate interpretations, while a manual on how to install some new software should prompt only one. Returning to the blueprint metaphor, one might describe the abstract poem as a sketch the author has drawn, while the computer manual is a very detailed plan. In between these two extremes, lie a range of texts that invite various degrees of individual interpretation.

As noted in beginning this section, constructivism is a social construct as well as a psychological on. Most constructivists emphasize that the social world in which we live heavily influences the meaning that we derive from our experiences, including our experiences with text. Thus, constructivism strongly supports the inclusion of a variety of sorts of discussion and group work as part of reading and learning (Calfee & Patrick, 1995).

All in all, the cognitive-constructivist view of the reading process conceives of the reader as an actively engaged participant who uses a variety of sorts of prior knowledge and frequently interacts with others as he or she constructs meaning from the text.

Concepts That Elaborate and Complement the Cognitive-Constructivist View

Now, let's consider three concepts that extend this view of the reading process: the interactive model of reading, automaticity, and metacognition.

The Interactive Model of Reading

Schema theory emphasizes the importance of the reader's knowledge in understanding a text. The interactive model of reading, on the other hand, serves as a reminder that both the reader and the text play important roles in reading. Interactive models can perhaps be best understood when contrasted to what have been called "bottom-up" and "top-down" models. Bottom-up models assume that the text is singularly important and that the reader processes text by first recognizing lower-level units and then repeatedly synthesizing lower-level units into more complex units. In this view, the reader might first perceive letters, then synthesize several letters to form words, then synthesize several words to form a phrase, and so on. Processing operates in a single direction – from the text to the reader.

Top-down models are just the opposite of bottom-up models. Top-down models assume that the reader is singularly important and processes text by first hypothesizing about the content of the text and then selectively sampling the text to confirm or disconfirm her hypothesis. In this view, the reading process begins with the highest level unit possible – meaning in the mind of the reader – and deals with lower-level units, for example words, only to a limited extent. Again, processing operates in a single direction – but in the top-down perspective that view is from the reader to the text.

As described by the interactive model (Rumelhart, 1977), processing is neither exclusively top down nor exclusively bottom up. Instead, the reader arrives at understanding of a text by simultaneously synthesizing information from a variety

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of sources. These include word-level knowledge, syntactic knowledge, and various sorts of schema he or she has internalized.

Good readers need to rely appropriately on the texts they are reading and their background knowledge to arrive at meaning, and they need to work with the sorts of texts and tasks that facilitate their doing so. For example, repeatedly giving students selections that deal with largely unfamiliar topics and that include a lot of difficult vocabulary may force them to give undue attention to the individual words they encounter, to neglect summoning up their prior knowledge to bear on their understanding of the text. Conversely, having students only read silently and providing no follow-up to what they read or having them repeatedly engage in post-reading discussions that are only vaguely related to what they read may encourage students to give too little attention to the text itself.

At this point, we should note a qualification regarding the interactive model. It has to do with what has been called "modular processing." In somewhat the same way that conceiving of reading as an interactive process acts as a caution against overemphasizing the role of schema-driven or top-down processing in reading, the concept of modularity acts as a caution against overgeneralizing the extent to which reading is an interactive process. As noted by Stanovich (1994), elements that are processed as modules are processed by themselves. In perceiving a cardinal, for example, we typically attend to the bird itself, without considering the context that surrounds the bird – the limb that it is perched on, the kind of tree in which it chose to land, or the area of the country we are in. It's not that these surrounding factors couldn't help us identify the bird; they could. But we don't need them; we need only to attend to the bird itself – a perceptual module. Using the context surrounding the bird to help us identify it would be inefficient.

In mature reading, words function as modules, and word recognition proceeds without the reader's making much use of context (the words and sentences surrounding the word the reader is focusing on) or prior knowledge. For the mature reader, recognition of individual words has become so automatic and effortless that using context or prior knowledge to help identify words is both unnecessary and inefficient. In fact, beginning readers actually use context more than mature readers do to identify words because beginning readers have not yet learned words fully enough that they function as modules.

One goal of initial instruction in reading is to rapidly move beginning readers to the point at which the majority of words they meet in reading are modules that are processed automatically and without the reader's needing to use context or prior knowledge.

Automaticity

The concept of automaticity is both a crucial concept and a straightforward one. An automatic activity is one that we can perform instantly and with very little attention. As LaBerge and Samuels (1974) pointed out in their pioneering work on automaticity in reading, the mind's attentional capacity is severely limited; in fact, we can only attend to about one thing at a time. If we are faced with a task in which we are forced to attend to too many things at once, we will fail. For example, a number of people have reached a level of automaticity in driving a stick

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shift car. They can automatically push in the clutch, let up on the accelerator, shift gears, let out the clutch, and press on the accelerator; and they can do all this while driving in rush hour traffic. Beginning drivers cannot do all of this at once; they have not yet automated the various subprocesses, and it would be foolish and dangerous for them to attempt to drive a stick shift car in an attention-demanding situation such as rush hour traffic.

Reading includes a number of subprocesses that need to take place at the same time – processes such as recognizing words, assigning meanings to words, constructing the meanings of sentences and larger units, and relating the information gleaned from the text to information we already have. Unless some of these processes are automated, readers simply cannot do all of this at once. Specifically, readers need to perform two processes automatically; they need to recognize words automatically, and they need to assign meanings to words automatically. For example, if a student is reading and comes across the word imperative, he or she needs to automatically recognize the word and automatically – immediately and without conscious attention – know that it means "absolutely necessary." If the learner needs to pause very often and go through some sort of mental process to recognize and assign meanings to words, reading will be difficult and laborious, and the student will not understand much of what he or she is reading.

This problem can be particularly acute for learners for whom English is a second language. In addition to going through the processes that native speakers do, non-native speakers may need to translate English words into their own language in the process of arriving at meaning. Thus, becoming automatic in processing words is extremely important for ESL students.

Fortunately, the road to automaticity is a very straight one. In order to become automatic at an activity, one needs to practice the activity a lot in non-taxing situations. To become automatic in reading, students need to do a lot of reading in materials they find relatively easy, understandable, interesting, and enjoyable; and they need to do that reading in situations that are non-taxing, that is, in situations in which they can read for information and enjoyment and not be faced with difficult questions or other requirements based on the reading. In brief, learners need to be given ample opportunity to read independently in material they find interesting, enjoyable, and relatively easy.

Metacognition

As defined by Flavel (1976), "metacognition refers to one's knowledge concerning one's own cognitive processes and products or anything related to them" (p. 232). With respect to reading, metacognition refers to the reader's awareness of his or her comprehension of a text as he or she is reading it and to the reader's regulation of the processes that lead to comprehension. Metacognitive readers have the ability to mentally step outside of themselves and view themselves as learners faced with particular learning tasks. In particular, accomplished readers have metacognitive knowledge about themselves, the reading tasks they face, and the strategies they can employ in completing these tasks (Garner, 1987). Active awareness of one's comprehension while reading and the ability to use effective fix-

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up strategies when comprehension breaks down are absolutely essential to becoming an effective reader (Schunk & Zimmerman, 1998), and lack of such metacognitive perspectives is a particularly debilitating characteristic of less-proficient readers.

In summary, the contemporary view of the reading process includes six constructs, which together define much of what an accomplished reader does as she processes text. The accomplished reader is an active processor of information who has achieved automaticity in recognizing words. As she reads, she uses her background knowledge and information gleaned from the text to construct meaning. All the while, she monitors the meaning she constructs from the text, and when comprehension breaks down she uses effective fix-up strategies to once again gain appropriate meaning from what she reads.

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The Need

The recent research on reading summarized above has considerably advanced our understanding of what reading is. Once learners master the relationship between oral and written language and have learned the basic techniques of reading and writing, the emphasis is put on how well they understand what they read. For example, research on skills involved in workplace, life and college reading tasks[3] has shown that the reading skills needed to function efficiently in everyday life are constantly increasing. In terms of instruction, lengthy passages may be needed to present tasks of realistic cognitive complexity.

Research has also shown that real-world reading tasks often involve sophisticated inferences which require relating information from many different sources found in complex document designs using graphs, diagrams or tables, as well as text. Cognitive information processing loads associated with such comprehension tasks are considerably higher than when reading text alone. The procedural text in adult-level documents found especially in the work place differs from typical elementary-level texts. These documents involve "reading to do" rather than "reading to learn." Consequently, such documents involve a series of design features, such as frequent use of headings and subheadings, distinctive forms of layout, typographical cues such as bulleting. Use of such cues varies considerably from document to document, and often is related to the content domain-specific

[3] See Sheehan, K. and Mislevy, R.J. (1989) *Integrating cognitive and psychometric models to measure document literacy.* Princeton, NJ: Educational Testing Service.

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meanings and purposes of the text. For example, the conventions used in "real-world" *reading to do* manuals, instructions, references and Web sites differ widely among themselves and from the type of *reading to learn* done in school and college.

Furthermore, research has shown that the optimum comprehension strategy is not universal, but varies substantially depending on the reader's understanding of the content, the document type, and the purpose for reading. This means the reader must be able to formulate a sophisticated reading comprehension strategy "on the fly" to meet the task at hand, and must be flexible in adapting the reading strategy to the task.

The need for new curricula in secondary and post-secondary reading

In many school curricula, formal reading instruction stops with the sixth grade, and strategies such as those uncovered by the research often are not taught at all. Research on reading deficits of high school and adult learners reflects this practice: true problems with initial decoding skills are rare for those born in the United States; foreign-born adults from cultures that do not have, or have not had until recently, a written language of their own still need to learn the relationship between oral language and written text. Furthermore, nearly all learners from middle school through adult level who are native English speakers without learning disabilities have sufficient skills in speaking and listening to the language to demonstrate that they have acquired the basic language skills needed to read sentences and paragraphs: precisely the skills which are usually taught at the elementary level. It is beyond that level, especially in comprehension of documents beyond one paragraph in length, that skill deficits are found.

The problem is only compounded by the content specialization of middle and high school teachers and the frequent isolation of the content areas from one another. Outside the English department, teachers rarely have any training in reading, and often teachers are unaware of the nature and significance of the special reading tasks commonly found in their own fields. Within the English department, teachers may not have easy access to instructional systems which teach the special strategies of the various content areas.

It is this problem that has led national standards efforts such as those sponsored by the National Council of Teachers of English (NCTE) to call for high school curricula to include reading in the content areas. These calls are being reflected in growing sophistication in the testing of reading comprehension by college entrance examinations such as the SAT and ACT, as well as many of the state competency tests.

For learners already in the work force, recent trends in adult literacy standards such as the GED II reflect a comparable emphasis on the unique reading comprehension skills of adult-level documents such as technical references and procedural documents.

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These changes in thinking about the advanced skills of reading has led reading instructors to seek instruction which:

- is keyed explicitly to the new generation of state and national standards and tests for secondary and adult populations.
- includes remedial instruction in the basics of language comprehension, for adults and young adults, and particularly for ESL learners (such instruction usually is not needed for native English speakers).
- includes age-appropriate reading comprehension practice at all grade levels 3-14.
- uses documents long enough to create the kind of cognitive complexity found in real-world documents, especially at the higher grade levels.
- is based on the current cognitive research on reading comprehension as a problem-solving activity, rather than a passive "absorbing and decoding" activity, by teaching specific cognitive strategies.
- deals explicitly with the unique reading tasks of each major content area in the high school curriculum.
- deals explicitly with the unique reading tasks of written communication forms commonly found in the work place.

The Influence of Standards

According to the U.S. Department of Education, 48 states have developed educational standards for K - 12 students. These include expected learning outcomes as well as measures to test the mastery of those outcomes. Federal standards, though very broad, provide at least an overview of reading requirements. They advocate that:

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
2. Students read a wide range of literature from many periods in may genres to build an understanding of the many dimensions (e.g. philosophical, ethical, aesthetic) of human experience.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g. sound-letter correspondence, sentence structure, context, graphics).

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4. Students develop an understanding of and respect for diversity in language use, patterns, and dialects across cultures, ethnic groups, geographic regions, and social roles.

In addition to the development of governmental standards, various academic and professional organizations have developed standards of their own for particular content areas. Of primary interest to us as we designed the new reading curricula were the standards proposed by the National Assessment of Educational Progress (NAEP), and The National Council of Teachers of English/ International Reading Association (NCTE and IRA). While the standards produced by each organization are unique, certain common elements emerge. For example, reading instruction should not only focus on the reading of literature, but also include reading for information and reading to perform a procedure. Each of these reading tasks require different skills or strategies which need to be explicitly taught.

We have correlated the proposed NAEP standards with a number of state standards documents (Texas, New Hampshire, North Carolina, Alabama, and Florida). While this correlation is not exhaustive, it does reflect common objectives across state requirements.

Included in the state standards, but not addressed by NAEP, are objectives for

- vocabulary development
- word recognition strategies
- study and reading strategies for the content areas
- self-adjustment of the reading rate when confronted with different types of text.

The objectives outlined above provide a good match with information obtained from Advisory Panel members, thus validating the importance of the standards. Skills mentioned by the Panel include

- summarization
- using reading to conduct research
- inference
- vocabulary development
- stating reasons to support ideas
- determining the author's purpose, style, bias, etc.
- test taking skills
- study/learning strategies

As a final validation of the curriculum design against standards, an alignment was performed with the Mid-Central Regional Education Laboratory (MCREL) Reading standards for grades 6-8. The MCREL standards are a synthesis of state standards. Alignment of the new PLATO curriculum was 90-100%, except for

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specific literature skills (genres, styles, etc.) and direct instruction in types of expository text. Trial alignments with the standards of selected clients spanning the entire upper elementary and post-secondary curriculum produced similarly excellent results.

Alignments to Tests

The new PLATO reading curricula move instruction to a cognitive strategy-centered model, with support from skill based instruction. The main focus is on higher order thinking skills as they apply to reading. In terms of Bloom's *Taxonomy of the Cognitive Domain,* emphasis is on analysis, synthesis, and evaluation. As a result, alignments to national tests such as the Metropolitan Achievement Test, Seventh Edition (MAT7) and the Iowa Tests of Basic Skills (ITBS) are greatly enhanced. To score well on tests such as these, the learner must move beyond literal comprehension and apply inferential thinking to what they have read. Care has been taken to use mastery test item formats similar to those used in national tests of reading, and the curriculum even includes a course on test-taking skills.

It is these needs, defined by trends in research, standards and tests, which led to the definition of requirements for the new PLATO reading curricula. The next section provides an overview of the curricula. Following sections examine each of them in more detail.

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An Overview of the PLATO Curricula in Reading

The diagram on the next page shows the various components of the PLATO curricula in reading, and how they fit together. There are five series:

- *Essential Reading Skills* (ERS) teaches the basic skills needed to understand sentences and paragraphs. The curriculum has two courses, one at the third grade level (ERS1) and one at the fourth (ERS2). These courses are designed to replace PLATO's *Reading 1* curriculum for the lower grade levels.
- *Reading Strategies* teaches 10 basic reading comprehension strategies, each at two levels, using a spiral curriculum structure. The series has two curricula, Fundamental Reading Strategies (FRS, grades 5-6) and Intermediate Reading Strategies (IRS, grades 7-"low" 9) with 10 courses each. These courses are designed to align closely with MCREL national synthesis of standards for reading in grades 6-8 and to complete the replacement of *Reading 1*.
- *Advanced Reading Strategies* (ARS) introduces an advanced strategy for comprehension, study and retention, and shows how to adapt it to the special requirements of reading in each of the major content areas. In addition, it includes vocabulary development, and a module on "how to do well on reading tests." While its focus differs from PLATO's previous *Reading 2* curriculum, ARS is intended to be used in its place. Its "reading in the content areas" courses are designed to be used as complements to their respective curriculum areas. Practice spans grade levels 9-14.
- *Vocabulary and Reading Comprehension* (VRC) are two curricula which provide extensive practice in comprehension of narrative and expository text, using passages from grade levels 3 through 9. Also included is vocabulary pre-teaching for these passages.
- The *Vocabulary Builder Editor* is a tool which allows instructors to construct their own vocabulary lessons similar to those in the *PLATO Vocabulary Builder*.
- *Reading for Information* (RFI) teaches comprehension strategies for reading tasks often encountered in "real world" work settings, such as reading notes, memos, technical documentation, procedural directions and reports. It also teaches how to use reference materials such as dictionaries, maps and graphic

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material. Special "challenge" exercises encourage the learner to maximize speed without sacrificing accuracy. This curriculum acts as a "bridge" between reading tasks in academic settings and reading in workplace settings.

- In addition, for learners who need instruction in initial decoding (phonics), PLATO has integrated the respected Windows-based *Reading Horizons* curriculum.

Taken together, the PLATO reading solution provides over 335 hours of self-instructional lessons and highly interactive, high quality on-line practice.

All courseware is written expressly for adults and young adults; none of the courseware is adapted from older curricula, nor was it originally written for the primary level. The overall look of the PLATO reading solution is youthful without being childish. Reading passages and graphics have contemporary themes of high interest to adults and young adults, including low-reading-level adults, middle and high school students. The writing and graphics are interesting and "fun" while still reflecting their serious learning purpose.

While the curricula "fit together," the highly modular structure of the courseware allows the system to be open, so the pieces may be used independently. Most activities represent less than 45 minutes of instruction (usually 15-30 minutes, except in some *Advanced Reading Strategies* exercises), and each can be independently accessed and prescribed depending on learners' needs. Most modules (with up to 4 activities) require approximately 60 minutes of study. The powerful *PLATO Pathways* management system empowers instructors to design their own curricula, and to include non-PLATO on- and off-line activities if desired. In addition, the curricula provide on-line tools (such as glossary, complete intermediate or adult dictionary and notepad) throughout. "Read the screen" audio assistance where appropriate, and paper-based supplementary reading and writing assignments are available for some curricula.

Parallel versions of the curricula are planned for U.S. domestic and international release. All curricula except *Reading for Information* are undergoing thorough localization in the U.K., to fully support curriculum standards for language, vocabulary, and cultural relevance.

The diagram on the next page provides an overview of the reading curricula and their relationships to reading levels.

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PLATO® Language Arts: Reading

Level													
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Getting started (initial decoding)

Reading Horizons

Building skills (reading sentences and paragraphs)

PLATO Essential Reading Skills

Reading comprehension strategies with skills embedded

PLATO Fundamental Reading Strategies	*PLATO Intermediate Reading Strategies*	*PLATO Advanced Reading Strategies*

Vocabulary and Comprehension Practice

PLATO Vocabulary and Reading Comprehension	*PLATO Reading Comprehension* (part of ARS courses 2-6)

Practical Reading

PLATO Reading for Information (WorkSkills series)

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Essential Reading Skills

Essential Reading Skills (ERS) is a curriculum of two courses with 32 tutorial lessons, each targeted on a single language skill which is important in reading. The first course, ERS1, includes 22 tutorials with hands-on practice, and corresponding mastery tests which teach basic word skills, ranging from identifying the correct reference of a pronoun through recognizing synonyms and antonyms. These are skills which native speakers generally acquire as they learn to speak, but review of a specific skill may be needed. For non-native speakers and learners with special needs, these are important basic language comprehension skills to learn, and the ERS tutorials may be useful supplemental instruction.

The second course, ERS2, teaches 10 core reading strategies of importance to all readers beyond the third-grade level, ranging from strategies for defining an unfamiliar word using context clues, through distinguishing facts from opinions. It includes 10 tutorials, each with corresponding application practice and mastery test. Over 100 short reading passages are used.

Using *PLATO Pathways*, instructors can select only the ERS lessons each learner needs. They can be included in a curriculum sequence either before instruction begins on *Reading Strategies* (see below), or prescribed (using the placement testing/prescription system, if desired) for review and remediation as the need arises during reading strategies instruction.

Reading Strategies: Fundamental and Intermediate

The two *Reading Strategies* curricula teach 10 cognitive strategies important for reading comprehension. The strategies range from using prior knowledge (*"using what you know")* to metacognition (*"tracking your understanding*"). Each strategy is taught at two reading levels. *Fundamental Reading Strategies* (FRS) teaches the ten strategies at the 5th grade level, while *Intermediate Reading Strategies* (IRS) teaches them at the 7th grade level in a spiral curriculum structure. Three curricula, FRS, IRS and *Advanced Reading Strategies* (ARS; see below) form the "cognitive strategy backbone" of PLATO's reading solution.

The courses use an appealing "Webzine" structure, built around an on-line multimedia magazine called *PLATO Read!* and *PLATO Read 2*. Learners interact extensively with actual reading tasks, while the magazine's "guest editor" for each issue models for them the cognitive strategies involved. Then, learners practice the strategies, first in a scaffolded environment, then with progressively less scaffolding, until the learners are reading "on their own." In mastery tests, question formats correspond to those commonly used in standardized tests. The two curricula use over 912 passages of varying length. In addition, 48 30-minute off-line activities are included for use as "homework," to build retention and fluency. 6 additional Problem Solving Activities (PSA's) teach metacognition. In all the courses include 202 separate learning and assessment activities.

Vocabulary and Reading Comprehension: Stories and Literature; Information and Expository Text

Vocabulary and Reading Comprehension (VRC) builds vocabulary and automaticity. Each carefully graded set of reading passages, covering grades 3

through 9, is accompanied by comprehension questions. One curriculum covers stories and literature; the other covers information and expository text.

The passages are of sufficient length and structure to require use of the reading strategies taught in *FRS* and *IRS*. Passages have approximately 300, 600, or 900 words for grades 3 and 4; and 400, 800, 1200 words for grades 5 – 9. In all, there are 84 comprehension activities which require an average of 30 minutes each to complete.

These exercises are supported by 84 pre-reading vocabulary lessons requiring about 15 minutes of study each. This system, the *PLATO Vocabulary Builder,* fosters a number of memory-building and comprehension-building strategies, combining audio and text.

Advanced Reading Strategies

Advanced Reading Strategies (ARS) is designed to help students prepare for the rigors of college and University study. Parts of the curriculum, especially course 2 and the reading comprehension activities at grade levels 9, 10, and 11, are useful for GED preparation. The general structure of the curriculum is to teach a reading/study strategy, followed by strategies for building vocabulary, increasing retention, and taking tests. Then these strategies are applied and adapted to four subject areas (social science, literature, history, and science), using reading material at about the high-ninth or tenth grade level. This allows the learning activities to be accessible to all students. Finally, reading comprehension practice is provided in each of these areas at grade levels from high-9th grade to 14th grade, or second year of college.

The general strategy taught in Course 1 involves pre-reading the text aids in order to generate questions; reading to answer those questions; and organizing the answers for study and later review.

In Course 2, the first module teaches strategies for building one's vocabulary, including interpreting words in context, using prefixes and suffixes, and using the dictionary. The second module deals with practical problems that can interfere with reading, such as lack of attention to the reading task, eye fatigue, and lack of confidence. The third module addresses strategies for performing well on tests that include reading comprehension. It includes specific techniques for tackling question formats commonly encountered on the SAT and college entrance examinations, including word meaning, sentence completion, and analogy items. Practice of these skills is often an important confidence builder for less skilled readers.

ARS is designed to be taken apart and integrated as a complementary learning activity into curricula in the content areas. It also is intended for post-secondary developmental studies programs.

Reading for Information

Reading for Information (RFI) teaches learners practical reading skills for use in the workplace and everyday adult life. Middle and High School students, learners

already in the workplace or those preparing to enter it can benefit from RFI. The course includes extensive real-life examples and sophisticated graphics.

RFI presents a reading strategy that improves learners' proficiency in real-life reading tasks. It teaches commonly-used skills such as using reference books, finding a word in an index, or following directions. Additional reading skills taught are commonly needed in workplace situations, such as reading short messages, forms, reports and regulations. Many of these skills are as useful in an academic setting as they are in the workplace.

Every course in RFI has objectives at many different levels, ranging from knowledge acquisition (simple remembering of a fact) to the analysis of ideas and the synthesis of concepts into new knowledge. As the learner progresses through a course, he or she builds upon previous knowledge. Tutorials, or topic-learning activities, provide in-depth instruction. Application activities encourage critical thinking, reasoning, and problem solving using previously acquired information. A special "Challenge" activity concludes each course. It provides a way for the learner to perform the skills taught within a self-imposed time limit, thus encouraging each learner to build fluency while maintaining the motivational frame of "doing my personal best." The final module in each course summarizes the content of that course into a strategy for dealing with the specific type of reading covered in the course.

The following sections discuss each of the products in greater detail. When aligning the courses and modules in these products, refer to the curriculum guides for each product, and to the courses themselves, for additional details.

Essential Reading Skills

Course Structure

Essential Reading Skills (ERS) includes the following components summarized in the table below.

Component and number	Estimated time each	Total estimated time (hrs)
22 tutorials (ERS1)	20 minutes	7.0
22 tests (ERS1)	10 minutes	3.5
10 tutorials (ERS2)	30 minutes	5.0
10 applications (ERS2)	20 minutes	3.3
10 mastery tests (ERS2)	10 minutes	1.75

The *ERS* modules provide intensive instruction and practice in particular word- and sentence-level skills important in reading. For native speakers, they can be used on a selective, remedial basis, or they can serve as part of a skill-based reading approach for ESL or general learner groups.

Terminal objectives of the 32 ERS modules are listed below. *ERS1* introduces the basic skills of word and sentence comprehension. *ERS2* starts teaching comprehension strategies and builds automaticity using short passages.

Essential Reading Skills

Essential Reading Skills 1

Each module has a tutorial and a mastery test; all are written at grade 3 and should be aligned with grade 3.

Pronouns

Identify the correct reference of a pronoun.

Possessive Pronouns

Identify the correct reference of a possessive pronoun.

Contractions with Is and Am

Identify the correct meaning of contractions with *is* and *am*.

Contractions with Will

Identify the correct meaning of contractions with *will*.

Contractions with Are

Identify the correct meaning of contractions with *are*.

Contractions with Not

Identify the correct meaning of contractions with *not*.

Contractions with Would

Identify the correct meaning of contractions with *would*.

Tenses of Regular Verbs

Recognize whether a regular verb refers to something taking place now, taking place in the past, or taking place in the future.

Tenses of Irregular Verbs

Recognize whether an irregular verb refers to something taking place now, taking place in the past, or taking place in the future.

Comparisons

Recognize the comparative and superlative forms of adjectives formed with –er and –est.

Compound Words

Given a compound word, recognize the meaning of the word, as distinct from the meanings of its several parts.

Abbreviations

Recognize the meanings of some common abbreviations.

Cause and Effect Words

Recognize common words that signal causes or effects.

Negative Prefixes

Given a root word, recognize the meaning of the word when a negative prefix (un, im, in, il, ir, dis, non) is added.

Prefixes

Given a root word, recognize the meaning of the word when a prefix (re, in, im, over) is added.

Prefixes of Number

Recognize the meanings of words that prefixes of number, up to 10.

Homonyms

Given a pair of homonyms (words that look alike but have different meanings) in a context sentence, identify the meaning of the words.

Homophones

Given a pair of homophones (words that sound the same but have different spellings) and a context sentence, identify the meaning of the words.

Idioms

Given a common English idiom, recognize the idiomatic meaning of the word or phrase.s

Similes

Given familiar English similes (comparisons that use the word *like* or *as*), recognize the meaning of the word or phrase.

Synonyms

Recognize words that are synonyms of a given word.

Antonyms

Recognize words that are antonyms of a given word.

Essential Reading Skills 2

Each module has a tutorial, and application, and a mastery test; all are written at grade 4 and should be aligned with grade 4.

Being a Word Detective

Define an unfamiliar word using clues from the context in which it is used.

Finding Main Ideas 1

Identify the main idea in a paragraph (when it is explicitly stated in the text).

Finding Main Ideas 2

Identify the main idea of a paragraph (whether it is stated or implied in the text).

What Happens Next?

Predict what will be in the next part you read based on what you've just read. Confirm/revise the prediction after reading the next part.

Finding What You Need

Given a passage or document and a purpose, find the relevant information. (NOTE: We teach the learner to skim or to scan to find specific information for a specific reason.)

Drawing Conclusions

Make and explain inferences using clues from the text and prior knowledge.

Working with Order

Answer comprehension questions that rely on logical, spatial, or chronological order.

Finding Causes and Effects

Determine causes and effect when the relationship is explicit or implicit in the text.

Finding What's Similar and What's Different

Compare information within a text or between texts for a given purpose.

Finding Facts and Opinions

Distinguish facts from opinions (the conclusions that can be drawn from the facts).

Instructional Design

Entry-level learners for *Essential Reading Skills (ERS)* should be able to read at or near the 3rd grade level[4]. However, these readers may lack specific language skills which need remediation, even if they are native speakers.

ERS is designed specifically for adults and young adult learners. It talks *to* these learners, not *down to* them. It uses attractive, adult-oriented graphics, with bright, vibrant colors, to add appeal and to support vocabulary learning. Strong audio support is included to drive the pace of the lessons and aid less skilled readers. *ERS1* is designed as a review for native English speakers. *ERS2* can serve as

[4] For readers who need instruction in initial decoding (phonics), PLATO offers *Reading Horizons* from another provider.

primary instruction for less skilled readers. *ERS* can serve as an important supplemental component of a complete instructional plan for ESL learners. Instructors also may wish to evaluate *ERS* for suitability with their learning disabled students.

ERS includes interactive practice in an extremely versatile design. The modules are designed so learners who need only a refresher on specific skills can spend just a few minutes in a lesson, while those who need more instruction will receive it, through additional explanations and more specific feedback to wrong answers. Within lessons, branching decisions are made automatically based on the way learner answers questions. In this way, *ERS* accommodates the widest possible range of low-level readers.

ERS2 contains over 100 passages for practice. Most are between 100 and 200 words, approximately at level 4 measured using the *Flesch-Kincaid* method. The passages are of a wide variety of types found in general and workplace reading. Subjects of the passages were carefully chosen to be of high interest to adult learners, based on suggestions offered by experienced adult literacy instructors. They deal with practical, real world information.

Interactions are designed with a high fidelity to common learning and work reading tasks. For example, the learner might be asked to click on certain details in a paragraph, or to select the heading that contains a specified piece of information. In *ERS2*, learners work directly with the text by drawing information from it. In the process, they learn how the parts of a written text go together.

The full online dictionary included in *ERS* is the *Merriam Webster Intermediate Dictionary,* which is appropriate for readers at this level. This allows learners to look up the meaning of any word on the screen simply by clicking on it.

Each lesson ends with a positive, upbeat success message. PLATO evaluations have shown repeatedly that the sense of accomplishment prompted by these messages is a key motivator for these learners.

Fundamental and Intermediate Reading Strategies

Course Structure

This course teaches cognitive strategies for reading comprehension. These strategies are the "backbone" of the entire intermediate reading curriculum. Taken together, the strategies are a sound, research-based approach to teaching the higher-order thinking skills of reading comprehension. Proficient readers have developed these strategies to a high level, and use them in combination depending on the purpose for reading and the document structure. The important thing is not to master each strategy individually (or even to master these particular strategies as defined here), but rather to develop proficiency in calling on them and combining them as appropriate to the task at hand.

The 10 strategies can be thought of in two clusters. The first cluster includes three strategies for learning new vocabulary. The second cluster includes six strategies for deriving the meaning from the document as a whole. The last strategy, *monitoring comprehension,* is "metacognitive": it requires the learner to monitor his or her own comprehension, and to invoke the other strategies appropriately to boost comprehension.

Reading Strategies has two parallel curricula in a spiral structure: *Fundamental Reading Strategies* introduces the strategies and uses passages at the Grade 5 reading level. *Intermediate Reading Strategies* teaches the strategies in a more advanced form, using passages at the Grade 7 level.

Definitions of the Reading Strategies[5]

Vocabulary Strategies

Using context to infer word meanings

Using this strategy, the reader uses the words and sentences surrounding an unknown word to make an educated guess about its meaning. Although context rarely yields a precise word meaning and although it usually takes meeting a word in context several times to arrive at the word's full meaning, most words are indeed learned from context and the better a reader becomes at this strategy, the more words he or she will learn.

[5] Most of these definitions are adapted from Graves, Juel and Graves (1998, 2001), pp. 292-299. Used here with permission.

Using word parts to infer word meanings

Sometimes parts of words – roots, prefixes, and suffixes – can be used to infer word meanings. The most valuable word parts are prefixes because they tend to be highly generative, have a consistent meaning, and have a consistent spelling. Somewhat less valuable are Latin and Greek roots because they are much less generative, have a less consistent meaning, and are often variously spelled. Suffixes are often the least valuable word parts for determining word meanings, because they typically have a grammatical function that doesn't really reveal lexical meaning or an abstract meaning that is difficult to work with.

Using the dictionary to determine or verify word meanings

It is useful to think of the dictionary as differentially effective for two different tasks. It is quite effective for verifying the meaning of a word for which the reader has a tentative meaning, but it is often less effective for getting the full meaning of a totally unknown word. Using the dictionary effectively requires several skills and understandings. It requires that the reader consults an appropriate dictionary, one that does not define the unknown word in still more difficult terms. It requires that the reader is able to consider the several definitions that are typically given for a word and select the one that matches the context in which the word is being used. It requires that the reader consider all of each definition provided and not simply a part of each definition. And it requires that the reader realize the limits of dictionary definitions.

Comprehension Strategies

Using prior knowledge

When using this strategy, readers purposely bring to consciousness information that relates to what they are going to read or what they are reading. What readers are doing here is putting a set of schemata into place, establishing a framework for the new information they will encounter in the text.

Discriminating between Fact and Opinion

Using this strategy, readers separate facts from opinions and further classify them as reliable or unreliable. Readers then stake a position based on the quality of the evidence in the available reading material. Unsophisticated readers often don't question the validity of a source when reading, taking all printed material as authoritative. Using this strategy encourages students to consider the quality of the information they find when they read.

Asking and answering questions

Using this strategy, the reader poses questions prior to reading a selection or as he or she is reading the selection and then attempts to answer the questions while reading. Employing this strategy virtually guarantees that reading is an active process. It also serves to focus the reader's attention. A reader who has asked a

particular set of questions will be particularly attentive to the information that answers those questions.

Making Inferences

When they apply this strategy, readers infer meanings by using information from the text and their existing knowledge of the world, their schemata, to fill in bits of information that are not explicitly stated in the text. No text is ever fully explicit and thus readers must constantly make inferences to understand what they are reading. By teaching students to make inferences, we are helping them learn to use their existing knowledge along with the information in the text to build meaning.

Determining what is important

Making use of this strategy requires that readers understand what they have read and make judgments about what is and is not important. Most texts contain much more information than a reader can focus on and learn. Consequently, determining what is important is a crucial and frequently required strategy. Sometimes, texts includes direct cues to what is important – overviews, headings, summaries, and the like. In many cases, however, students need to rely on their prior knowledge to infer what is important in a particular selection.

Summarizing

Using this strategy requires readers first to determine what is important and then to condense it and put it in their own words. The following are some basic rules for summarizing:

- Delete trivial and irrelevant information
- Delete redundant information
- Provide a superordinate term for members of a category
- Find and use generalizations the author has made
- Create your own generalizations when the author has not provided them

Dealing with graphic information

When they employ this strategy, readers give conscious attention to the visual information supplied by the author. Before learning to read, people are drawn to and fascinated by the visual material books offer. Teaching them when, how, and why to use the illustrations, graphs, maps, diagrams, and other visuals that accompany selections will enable them to make optimal use of the visual aids texts often provide.

Imaging and creating visual representations

Using this strategy, readers create visual representations of text either in their minds or by reproducing them on paper or other tangible forms. One kind of imaging occurs when readers visualize people, events, and places. Another kind of

imaging consists of visually organizing key ideas in text in a way that graphically displays their relationships. The former type of imaging tends to be used with narrative materials, while the latter works particularly well with expository text.

Monitoring comprehension

Good readers are metacognitive; that is, they monitor their comprehension. Monitoring comprehension is a more general strategy than any of those discussed thus far. In monitoring comprehension, readers keep track of what they wish to gain from a text and of their understanding – or lack of understanding – of the text as they are reading. They then use whatever strategies they need to maintain or improve comprehension. Readers who monitor their comprehension are asking these kinds of questions: "Am I understanding what the author is saying? What do I do if I don't understand something I'm reading? What could I be doing to understand better what the author is saying? Can I do something that will help me remember the material better?"

Curriculum Objectives

Following is a summary of the objectives for the two *Reading Strategies* curricula.

Fundamental Reading Strategies

Each course has 2 or 3 modules. Each module has a tutorial, an application, a mastery test, and a homework paper. All are written at grade 5 and should be aligned for grades 5 or 6. Terminal objectives (those covered in mastery tests) are listed first. Enabling objectives are bulleted.

Expanding Your Vocabulary

Using Context Clues

Given an unfamiliar word in a context that provides clues to its meaning, determine a reasonable meaning for the word.

- Recognize that context can give clues to the meaning of an unknown word.
- Recognize when context clues are **not** present.

Using Prefix Clues

Given a word with a prefix and a familiar base word, the student uses knowledge of the prefix to determine the meaning of the given word.

- Determine whether a word has a true prefix (*dis*appear, *dis*honest) or a false prefix (*dis*turb, *dis*tant).
- Determine how a particular prefix changes words (*in-* means *not* so it must make a word mean the opposite of its base word).

Using the Dictionary

Given a word for which the student is unsure of the meaning, use a dictionary to confirm or disconfirm the student's hunch.

- Select the most appropriate of several meanings in a dictionary.

Using What You Know

Using What You Know to Read Narrative passages and stories

Given a passage of at least one paragraph, the student will use existing knowledge to help him or her interpret the meaning of that passage.

- Use existing knowledge as an aid to interpreting narrative passages, including poetry and drama.

Using What You Know to Read Information

Given a passage of at least one paragraph, the student will use existing knowledge to help him or her interpret the meaning of that passage.

- Use existing knowledge as an aid to interpreting expository passages.

Using What You Know to Read More Information

Given a passage of at least one paragraph, the student will use existing knowledge to help him or her interpret the meaning of that passage.

- Use existing knowledge as an aid to interpreting expository passages.

Separating Facts from Opinions

Separating Facts from Opinions

Given an assertion in a reading passage between one sentence and 200 words, learner will be able to categorize the assertion as *statement* or *opinion*, and then further categorize the statements as *fact*, *misinformation*, or *ambiguous*, and the opinions as *reliable, unreliable,* or *subjective*.

Separating More Facts from Opinions

Given an assertion in a reading passage between one sentence and 200 words, learner will be able to categorize the assertion as *statement* or *opinion*, and then further categorize the statements as *fact*, *misinformation*, or *ambiguous*, and the opinions as *reliable, unreliable,* or *subjective*.

Asking and Answering Questions

Asking and Answering Questions about Narrative passages and stories

Given a passage of at least one paragraph, the student will ask and answer appropriate questions to help him or her interpret the meaning of that passage.

- Distinguish between questions whose answers have to be found in the text and questions whose answers require reader input; be able to generate each type and know how to answer each.
- Evaluate personal use of a question and answer strategy.
- Use a question and answer strategy as an aid to interpreting narrative passages and literature, including poetry and drama.

Asking and Answering Questions about Information

Given a passage of at least one paragraph, the student will ask and answer appropriate questions to help him or her interpret the meaning of that passage.

- Distinguish between questions whose answers have to be found in the text and questions whose answers require reader input; be able to generate each type and know how to answer each.
- Evaluate personal use of a question and answer strategy.
- Use a question and answer strategy as an aid to interpreting expository passages.

Asking and Answering Questions about More Information

Given a passage of at least one paragraph, the student will ask and answer appropriate questions to help him or her interpret the meaning of that passage.

- Distinguish between questions whose answers have to be found in the text and questions whose answers require reader input; be able to generate each type and know how to answer each.
- Evaluate personal use of a question and answer strategy.
- Use a question and answer strategy as an aid to interpreting expository passages.

Reading Between the Lines

Reading Between the Lines in Narrative passages and stories

Given a passage of at least one paragraph, the student will infer a meaning not directly stated in that passage.

- Use any combination of the following to infer meaning where it is not directly stated in text:
  - Personal prior knowledge about topic
  - Vocabulary skills
  - Grammar, syntax, other text-based clues
- Infer meaning that is not directly stated in a literature or narrative text passage.
- Infer meaning that is not directly stated in an expository text passage.

Reading Between the Lines in Information

Given a passage of at least one paragraph, the student will infer a meaning not directly stated in that passage.

- Use any combination of the following to infer meaning where it is not directly stated in text:
  - Personal prior knowledge about topic
  - Vocabulary skills
  - Grammar, syntax, other text-based clues
  - Infer meaning that is not directly stated in an expository text passage.

Reading Between the Lines in More Information

Given a passage of at least one paragraph, the student will infer a meaning not directly stated in that passage.

- Use any combination of the following to infer meaning where it is not directly stated in text:
  - Personal prior knowledge about topic
  - Vocabulary skills
  - Grammar, syntax, other text-based clues
  - Infer meaning that is not directly stated in an expository text passage.

Finding What's Important

Finding What's Important in Narrative passages and stories

Given a passage of at least one paragraph, the student will determine which information is important in that passage.

- Distinguish between important and unimportant information.
- Distinguish between what is interesting (for personal reasons) and what is important given one's purpose.

Finding What's Important in Information

Given a passage of at least one paragraph, the student will determine which information is important in that passage.

- Distinguish between important and unimportant information.
- Distinguish between what is interesting (for personal reasons) and what is important given one's purpose.
- Identify what a text/author is covering and how the text is organized by looking at text aids, paragraphing, etc. (information modules only)

Finding What's Important in More Information

Given a passage of at least one paragraph, the student will determine which information is important in that passage.

- Distinguish between important and unimportant information.
- Distinguish between what is interesting (for personal reasons) and what is important given one's purpose.

- Identify what a text/author is covering and how the text is organized by looking at text aids, paragraphing, etc. (information modules only)

Summarizing What You Read

Summarizing Narrative passages and stories

Given a passage of more than one paragraph, the student will writer a summary of that passage.

- Distinguish among somewhat important, most important, and unimportant information in a single paragraph.
- Combine "most important" information from several paragraphs into a statement.
- Determine what information in a passage, if any, is redundant.
- Eliminate information that does not fit with the theme of the passage.
- Distinguish between what is important to the learner (what is interesting) and what is important to the writer or teacher (what will help with understanding and on tests).
- Identify the topic of a story
- Identify the main events of a story
- Identify the main characters of a story, their feelings, and how their feelings change

Summarizing Information

Given a passage of more than one paragraph, the student will writer a summary of that passage.

- Distinguish among somewhat important, most important, and unimportant information in a single paragraph.
- Combine "most important" information from several paragraphs into a statement.
- Determine what information in a passage, if any, is redundant.
- Eliminate information that does not fit with the theme of the passage.
- Distinguish between what is important to the learner (what is interesting) and what is important to the writer or teacher (what will help with understanding and on tests).

Summarizing More Information

Given a passage of more than one paragraph, the student will writer a summary of that passage.

- Distinguish among somewhat important, most important, and unimportant information in a single paragraph.
- Combine "most important" information from several paragraphs into a statement.
- Determine what information in a passage, if any, is redundant.
- Eliminate information that does not fit with the theme of the passage.
- Distinguish between what is important to the learner (what is interesting) and what is important to the writer or teacher (what will help with understanding and on tests).

Using Pictures to Help You Understand

Using Pictures to Help You Understand Information

Find and interpret information from a passage with text and graphics.

- Determine the purpose of the graphic.
- Recognize cues and prompts that are part of a graphic.
- Compare visual information to information in the text.
- Tell (articulate) what a graphic shows.

Using Pictures to Help You Understand More Information

Find and interpret information from a passage with text and graphics.

- Determine the purpose of the graphic.
- Recognize cues and prompts that are part of a graphic.
- Compare visual information to information in the text.
- Tell (articulate) what a graphic shows.

Picturing What You Read

Picturing What You Read When You Read Narrative passages and stories

Given a passage that contains imagery, the student will use an appropriate visualization of the content of that passage as an aid to comprehension of that passage.

- Select examples of *visualizations* that show an understanding that they are "pictures in your mind."
- Judge tutor's and own visualizations as similar or dissimilar.
- Judge one's mental image as similar or dissimilar to what is described in words.

Picturing What You Read When You Read Information

Given a passage that contains imagery, the student will use an appropriate visualization of the content of that passage as an aid to comprehension of that passage.

- Select examples of *visualizations* that show an understanding that they are "pictures in your mind."
- Judge tutor's and own visualizations as similar or dissimilar.
- Judge one's mental image as similar or dissimilar to what is described in words.

Tracking Your Understanding

Tracking Your Understanding of Narrative passages and stories

NOTE: The design for this course has not been written. The objective below is approximate and very generally stated.

When reading, be aware of whether you are understanding what you read; if you are not, use a suitable strategy to get back on track.

Tracking Your Understanding of Information

NOTE: The design for this course has not been written. The objective below is approximate and very generally stated.

When reading, be aware of whether you are understanding what you read; if you are not, use a suitable strategy to get back on track.

Tracking Your Understanding of More Information

NOTE: The design for this course has not been written. The objective below is approximate and very generally stated.

When reading, be aware of whether you are understanding what you read; if you are not, use a suitable strategy to get back on track.

Intermediate Reading Strategies

Each course has 2 or 3 modules. Each module has a tutorial, an application, a mastery test, and a homework paper. All are written at grade 7 and should be aligned for grades 7, 8, or low 9. Terminal objectives (those covered in mastery tests) are listed first. Enabling objectives are bulleted.

Enriching Your Vocabulary

Using Context Clues to Find Word Meanings

Given an unfamiliar word in a context that provides clues to its meaning, determine a reasonable meaning for the word.

- Recognize that context can give clues to the meaning of an unknown word.
- Recognize when context clues are **not** present.

Using Prefix Clues to Find Word Meanings

Given a word with a prefix and a familiar base word, the student uses knowledge of the prefix to determine the meaning of the given word.

- Determine whether a word has a true prefix (*dis*appear, *dis*honest) or a false prefix (*dis*turb, *dis*tant).
- Determine how a particular prefix changes words (*in-* means *not* so it must make a word mean the opposite of its base word).

Using the Dictionary to Find Word Meanings

Given a word for which the student is unsure of the meaning, use a dictionary to confirm or disconfirm the student's hunch.

- Select the most appropriate of several meanings in a dictionary.

Using Prior Knowledge When You Read

Using Prior Knowledge to Read Literature

Given a passage of at least one paragraph, the student will use existing knowledge to help him or her interpret the meaning of that passage.

- Use existing knowledge as an aid to interpreting narrative passages, including poetry and drama.

Using Prior Knowledge to Read Expository Text

Given a passage of at least one paragraph, the student will use existing knowledge to help him or her interpret the meaning of that passage.

- Use existing knowledge as an aid to interpreting expository passages.

Using Prior Knowledge to Read More Expository Text

Given a passage of at least one paragraph, the student will use existing knowledge to help him or her interpret the meaning of that passage.

- Use existing knowledge as an aid to interpreting expository passages.

Discovering Facts and Opinions

Discovering Facts and Opinions

Given one or more short passages (< 300 words) about a controversial issue (but not **too** controversial), learner will be able to take a position that accounts for the quality of the sources and the merits of their opinions.

Discovering More Facts and Opinions

Given one or more short passages (< 300 words) about a controversial issue (but not **too** controversial), learner will be able to take a position that accounts for the quality of the sources and the merits of their opinions.

Using a Question/Answer Strategy

Using a Question/Answer Strategy with Literature

Given a passage of at least one paragraph, the student will ask and answer appropriate questions to help him or her interpret the meaning of that passage.

- Distinguish between questions whose answers have to be found in the text and questions whose answers require reader input; be able to generate each type and know how to answer each.
- Evaluate personal use of a question and answer strategy.
- Use a question and answer strategy as an aid to interpreting narrative passages and literature, including poetry and drama.

Using a Question/Answer Strategy with Expository Text

Given a passage of at least one paragraph, the student will ask and answer appropriate questions to help him or her interpret the meaning of that passage.

- Distinguish between questions whose answers have to be found in the text and questions whose answers require reader input; be able to generate each type and know how to answer each.
- Evaluate personal use of a question and answer strategy.
- Use a question and answer strategy as an aid to interpreting expository passages.

Using a Question/Answer Strategy with More Expository Text

Given a passage of at least one paragraph, the student will ask and answer appropriate questions to help him or her interpret the meaning of that passage.

- Distinguish between questions whose answers have to be found in the text and questions whose answers require reader input; be able to generate each type and know how to answer each.
- Evaluate personal use of a question and answer strategy.
- Use a question and answer strategy as an aid to interpreting expository passages.

Making Inferences

Making Inferences about Literature

Given a passage of at least one paragraph, the student will infer a meaning not directly stated in that passage.

- Use any combination of the following to infer meaning where it is not directly stated in text:
- Personal prior knowledge about topic
- Vocabulary skills
- Grammar, syntax, other text-based clues
- Infer meaning that is not directly stated in a literature or narrative text passage.

Making Inferences about Expository Text

Given a passage of at least one paragraph, the student will infer a meaning not directly stated in that passage.

- Use any combination of the following to infer meaning where it is not directly stated in text:
- Personal prior knowledge about topic
- Vocabulary skills
- Grammar, syntax, other text-based clues

- Infer meaning that is not directly stated in an expository text passage.

Making Inferences about More Expository Text

Given a passage of at least one paragraph, the student will infer a meaning not directly stated in that passage.

- Use any combination of the following to infer meaning where it is not directly stated in text:
- Personal prior knowledge about topic
- Vocabulary skills
- Grammar, syntax, other text-based clues
- Infer meaning that is not directly stated in an expository text passage.

Locating What's Important

Locating What's Important in Literature

Given a passage of at least one paragraph, the student will determine which information is important in that passage.

- Distinguish between important and unimportant information.
- Distinguish between what is interesting (for personal reasons) and what is important given one's purpose.

Locating What's Important in Expository Text

Given a passage of at least one paragraph, the student will determine which information is important in that passage.

- Distinguish between important and unimportant information.
- Distinguish between what is interesting (for personal reasons) and what is important given one's purpose.
- Identify what a text/author is covering and how the text is organized by looking at text aids, paragraphing, etc.

Locating What's Important in More Expository Text

Given a passage of at least one paragraph, the student will determine which information is important in that passage.

- Distinguish between important and unimportant information.
- Distinguish between what is interesting (for personal reasons) and what is important given one's purpose.
- Identify what a text/author is covering and how the text is organized by looking at text aids, paragraphing, etc.

Summarizing What's Important

Summarizing What's Important

Given a passage of more than one paragraph, the student will writer a summary of that passage.

- Distinguish among somewhat important, most important, and unimportant information in a single paragraph.
- Combine "most important" information from several paragraphs into a statement.
- Determine what information in a passage, if any, is redundant.
- Eliminate information that does not fit with the theme of the passage.
- Distinguish between what is important to the learner (what is interesting) and what is important to the writer or teacher (what will help with understanding and on tests).
- Identify the topic of a story
- Identify the main events of a story

- Identify the main characters of a story, their feelings, and how their feelings change

Summarizing What's Important in Expository Text

Given a passage of more than one paragraph, the student will writer a summary of that passage.

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Given a passage of more than one paragraph, the student will writer a summary of that passage.

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- Eliminate information that does not fit with the theme of the passage.
- Distinguish between what is important to the learner (what is interesting) and what is important to the writer or teacher (what will help with understanding and on tests).

Using Graphics to Help You Understand

Using Graphics to Help You Understand Expository Text

Find and interpret information from a passage with text and graphics.

- Determine the purpose of the graphic.
- Recognize cues and prompts that are part of a graphic.
- Compare visual information to information in the text.
- Tell (articulate) what a graphic shows.

Using Graphics to Help You Understand More Expository Text

Find and interpret information from a passage with text and graphics.

- Determine the purpose of the graphic.
- Recognize cues and prompts that are part of a graphic.
- Compare visual information to information in the text.
- Tell (articulate) what a graphic shows.

Visualizing When You Read

Visualizing When You Read Literature

Given a passage that contains imagery, the student will use an appropriate visualization of the content of that passage as an aid to comprehension of that passage.

- Select examples of *visualizations* that show an understanding that they are "pictures in your mind."
- Judge tutor's and own visualizations as similar or dissimilar.
- Judge one's mental image as similar or dissimilar to what is described in words.

Visualizing When You Read Expository Text

Given a passage that contains imagery, the student will use an appropriate visualization of the content of that passage as an aid to comprehension of that passage.

- Select examples of *visualizations* that show an understanding that they are "pictures in your mind."
- Judge tutor's and own visualizations as similar or dissimilar.
- Judge one's mental image as similar or dissimilar to what is described in words.

Monitoring Your Comprehension

Monitoring Your Comprehension of Literature

NOTE: The design for this course is in development. The objective below is approximate and very generally stated.

When reading, be aware of whether you are understanding what you read; if you are not, use a suitable strategy to get back on track.

Monitoring Your Comprehension of Expository Text

NOTE: The design for this course is in development. The objective below is approximate and very generally stated.

When reading, be aware of whether you are understanding what you read; if you are not, use a suitable strategy to get back on track.

Monitoring Your Comprehension of More Expository Text

NOTE: The design for this course is in development. The objective below is approximate and very generally stated.

When reading, be aware of whether you are understanding what you read; if you are not, use a suitable strategy to get back on track.

Instructional Design

The on-line components of *Reading Strategies* are summarized in the table below. *Reading Strategies* also provides off-line "homework" activities that allow instructors to make assignments that they can collect and assess.

Component and number	Estimated time each	Total estimated time (hrs)
48 strategy tutorials	45 minutes	34
48 strategy applications	30 minutes	24
48 off-line homeworks	30 minutes	24
48 strategy tests	30 minutes	24
6 Problem-Solving Activities	45 minutes	5

Graphic design for *Reading Strategies* uses an attractive and contemporary "webzine" (magazine) format designed to appeal to adults and young adults.

Research on instruction in cognitive strategies emphasizes the importance of using "think aloud" modeling to teach the strategy. To meet this need, each course's "magazine" includes a "guest editor" who acts as the tutor for that course. There are ten tutors for the curriculum, one for each strategy. Each tutor's character has

a background and experiences similar to those of the targeted adult and young adult learners.

The tutors begin each presentation by modeling the strategy, by reading a passage, "thinking aloud" about the strategy needed, and taking notes in the "tutor workbook".

Then, the learner helps the tutor respond to two "letters to the editor." These provide additional positive and negative examples of the strategy, to point out elaborations or common misconceptions about it. The learner responds and receives feedback via 3-5 multiple choice questions.

Finally, the learner uses a "student workbook" to take notes just as the tutor did. The workbook records open-ended answers for later judging by an instructor. It works in two steps: first the learner compares his/her answers to the tutor's answers, using an answer rubric. Second, the learner can revise his/her answer. The original response and the revision, if any, is stored in the Learner Log, and can be printed for instructor review. In this way, the workbook also provides data for educators who use portfolio assessment.

At least 4 additional multiple-choice questions in each Application lesson provide objective practice and feedback in each lesson, using item formats common in standardized tests. Application lessons report a score to the PLATO *Pathways* management system.

Mastery tests typically have 5 questions randomly selected from a pool of 10, all in formats commonly used in standardized tests. Mastery test lessons report "mastery," for a score of 80% or above, to provide learners and instructors immediate feedback on how well each strategy is understood.

A strategy review is available throughout the lesson, on demand.

Integrated audio for instruction assists less skilled readers and allows them to focus on reading the on-screen text, while taking care not to "short circuit" the reading process itself.

To teach cognitive metastrategies, problem solving activities are employed, using a "Workshop" architecture. Learners work through real-world reading tasks. As they read, they must select, combine and construct appropriate strategies from the full range of cognitive strategies they have mastered. They can compare their strategy choices with those of a mentor, judge their success, and try again if needed.

A full on-line dictionary built into *Reading Strategies*. This allows the learner to look up the meaning of any word by typing it, and any on-screen word by right-clicking on it.

Vocabulary and Reading Comprehension

Curriculum Structure

Vocabulary and Reading Comprehension builds proficiency and fluency in intermediate reading skills, including both comprehension skills and vocabulary building. It is designed be a companion to *Reading Strategies*, or to be used alone. It includes the components summarized in the table below. These components are divided evenly between two curricula, *Reading Stories and Narrative Text* and *Reading Facts and Expository Text.*

Component and number	Estimated time each	Total estimated time (hrs)
84 10- or 20-word WordBanks (pre-reading vocabulary)	20 minutes	28
84 Practices	30 minutes	42

The practice passages are graded by reading level, using the *Flesch-Kincaid* method. Each practice incorporates interactions practicing appropriate reading tasks taught in *Reading Strategies,* from locating relevant facts to making complex inferences.

Vocabulary and Reading Comprehension – Narrative passages and stories and Literature

Each course is written at the grade level indicated. We have attempted to make the passages interesting to youth and adults, but suitable for middle school children. Courses should be aligned only to the reading level indicated. Although

activities are provided at grade levels 3 and 4, *they are not intended for students younger than 11, or grade 5.*

Vocabulary and Reading Narrative passages and stories, Level 3

Note: each of the following modules have the same two objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 300, 600, 900 words. All passages have at least one inferential question.

Vocabulary and Reading Narrative passages and stories 3A
Vocabulary and Reading Narrative passages and stories 3B
Vocabulary and Reading Narrative passages and stories 3C
Vocabulary and Reading Narrative passages and stories 3D
Vocabulary and Reading Narrative passages and stories 3E
Vocabulary and Reading Narrative passages and stories 3F

Vocabulary and Reading Narrative passages and stories, Level 4

Note: each of the following modules have the same two objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 300, 600, 900 words. All passages have at least one inferential question.

Vocabulary and Reading Narrative passages and stories 4A
Vocabulary and Reading Narrative passages and stories 4B
Vocabulary and Reading Narrative passages and stories 4C
Vocabulary and Reading Narrative passages and stories 4D
Vocabulary and Reading Narrative passages and stories 4E
Vocabulary and Reading Narrative passages and stories 4F

Vocabulary and Reading Narrative passages and stories, Level 5

NOTE: all the modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Narrative passages and stories 5A
Vocabulary and Reading Narrative passages and stories 5B
Vocabulary and Reading Narrative passages and stories 5C
Vocabulary and Reading Narrative passages and stories 5D
Vocabulary and Reading Narrative passages and stories 5E
Vocabulary and Reading Narrative passages and stories 5F

Vocabulary and Reading Narrative passages and stories, Level 6

NOTE: all the modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Narrative passages and stories 6A
Vocabulary and Reading Narrative passages and stories 6B
Vocabulary and Reading Narrative passages and stories 6C
Vocabulary and Reading Narrative passages and stories 6D
Vocabulary and Reading Narrative passages and stories 6E
Vocabulary and Reading Narrative passages and stories 6F

Vocabulary and Reading Literature, Level 7

NOTE: all the modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Literature 7A
Vocabulary and Reading Literature 7B
Vocabulary and Reading Literature 7C
Vocabulary and Reading Literature 7D
Vocabulary and Reading Literature 7E
Vocabulary and Reading Literature 7F

Vocabulary and Reading Literature, Level 8

NOTE: all the modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Literature 8A
Vocabulary and Reading Literature 8B
Vocabulary and Reading Literature 8C
Vocabulary and Reading Literature 8D
Vocabulary and Reading Literature 8E
Vocabulary and Reading Literature 8F

Vocabulary and Reading Literature, Level 9

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 400, 800, 1200 words. All passages have at least two inferential questions. Inferential questions may require drawing information from two or three paragraphs.

Vocabulary and Reading Literature 9A
Vocabulary and Reading Literature 9B
Vocabulary and Reading Literature 9C
Vocabulary and Reading Literature 9D
Vocabulary and Reading Literature 9E
Vocabulary and Reading Literature 9F

Vocabulary and Reading Comprehension – Information and Expository Text

Each course is written at the grade level indicated. We have attempted to make the passages interesting to youth and adults, but suitable for middle school children. Courses should be aligned only to the reading level indicated. Although activities are provided at grade levels 3 and 4, *they are not intended for students younger than 11, or grade 5.*

Vocabulary and Reading Information, Level 3

Note: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about expository passages of about 300, 600, 900 words. All passages have at least one inferential question.

Vocabulary and Reading Information 3A
Vocabulary and Reading Information 3B
Vocabulary and Reading Information 3C
Vocabulary and Reading Information 3D
Vocabulary and Reading Information 3E
Vocabulary and Reading Information 3F

Vocabulary and Reading Information, Level 4

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about narrative passages and stories of about 400, 800, 1200 words. All passages have at least two inferential questions. Inferential questions may require drawing information from two or three paragraphs.

Vocabulary and Reading Information 4A
Vocabulary and Reading Information 4B
Vocabulary and Reading Information 4C
Vocabulary and Reading Information 4D
Vocabulary and Reading Information 4E
Vocabulary and Reading Information 4F

Vocabulary and Reading Information, Level 5

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about expository passages of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Information 5A
Vocabulary and Reading Information 5B
Vocabulary and Reading Information 5C
Vocabulary and Reading Information 5D
Vocabulary and Reading Information 5E
Vocabulary and Reading Information 5F

Vocabulary and Reading Information, Level 6

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about expository passages of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Information 6A
Vocabulary and Reading Information 6B
Vocabulary and Reading Information 6C
Vocabulary and Reading Information 6D
Vocabulary and Reading Information 6E
Vocabulary and Reading Information 6F

Vocabulary and Reading Expository Text, Level 7

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about expository passages of about 400, 800, 1200 words. All passages have at least two inferential questions.

Vocabulary and Reading Expository Text 7A

Vocabulary and Reading Expository Text 7B

Vocabulary and Reading Expository Text 7C

Vocabulary and Reading Expository Text 7D

Vocabulary and Reading Expository Text 7E

Vocabulary and Reading Expository Text 7F

Vocabulary and Reading Expository Text, Level 8

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about expository passages of about 400, 800, 1200 words. All passages have at least two inferential questions. Inferential questions may require drawing information from two or three paragraphs.

Vocabulary and Reading Expository Text 8A

Vocabulary and Reading Expository Text 8B

Vocabulary and Reading Expository Text 8C

Vocabulary and Reading Expository Text 8D

Vocabulary and Reading Expository Text 8E

Vocabulary and Reading Expository Text 8F

Vocabulary and Reading Expository Text, Level 9

NOTE: all modules below have these objectives:

Learn key vocabulary words that will be seen in reading comprehension passages.

Answer factual, explicit, and inferential questions about expository passages of about 400, 800, 1200 words. All passages have at least two inferential questions. Inferential questions may require drawing information from two or three paragraphs.

Vocabulary and Reading Expository Text 9A

Vocabulary and Reading Expository Text 9B

Vocabulary and Reading Expository Text 9C

Vocabulary and Reading Expository Text 9D

Vocabulary and Reading Expository Text 9E

Vocabulary and Reading Expository Text 9F

Instructional Design

Learners need to practice sustained reading, so *Reading Comprehension* exercises each have three passages: one short, one of medium length, and a long one. A total of 252 passages are used, including literature, stories, narratives and various types of expository reading in a variety of subjects of high interest to adult and young adult learners. This wide variety of passage types and lengths is universally required by state curriculum standards.

Each of the two Vocabulary and Reading Comprehension curricula has seven courses, one for each grade level from 3 through 9. Each curriculum includes at least 84 passages for the learner to read and practice using the strategy. The questions include factual, explicit, and inferential types, with most of the weight on inference.

- *Factual* questions have a straightforward answer found in one place in the text. For the lower levels, the answer is contained in one sentence. For the higher grades, it can be more spread out, but always within one paragraph. The stem and correct alternative choice are generally word-for-word with the passage.
- *Explicit* questions have a straightforward answer. The answer partially paraphrases the text, while still using some of the same words. Answers to explicit questions are found in no more than the number of paragraphs specified for a given grade level.
- *Inferentiai* questions have an answer which is not explicitly stated in the passage, but which can be derived from two or more points in the passage, or from one point in the passage plus the learner's prior knowledge. Answers to inferential questions at this level should seem easy and obvious to college-educated writers and reviewers. Inferential questions are made more difficult for the higher grades than they can be for the lower ones, by increasing the number of points referenced and their separation in the passage. Points relevant to inferential questions are found in no more than the number of paragraphs specified for a given level. Questions for which an overview of the entire passage is needed to correctly answer the question (i.e., on "the main idea of the passage") are not used, since this is a separate skill. However, questions based on the "About the author" or "About the passage" paragraphs are allowed.

The table below shows how practice is allocated in each course.

	Level 3-4	Level 5-6	Level 7-9
Number of Questions	5	5	5
Factual Questions	1	1	0 or 1
Explicit Questions	2 or 3	2	1 or 2
Inferential Questions	1 or 2*	2	2 or 3*
Inferential and explicit Qs: answer found in how many paragraphs?	1	1 or 2	1 to 3

*Whenever possible, the maximum number of inferential questions are included.

A universal "No" symbol marks incorrect answers, and attention-getting wrong-answer feedback includes animations and arrows pointing to the relevant part of the passage.

Reading Comprehension continues the sophisticated and engaging "Webzine" theme of *Reading Strategies*, with bold graphics and attention-getting headlines encouraging the learner to *Explore!* reading. Large fonts, simple instructions and contemporary colors add to the motivation.

If a learner clicks on a colored word in a passage, a "surprise" pops up. These are graphics, maps, audio clips, or other graphics which give the learner additional information about the passage for enrichment, without adding gratuitous distractions.

Research shows that vocabulary is one of the best predictors of reading test performance, so each lesson is accompanied by a pre-reading *Vocabulary Builder* lesson. The *Vocabulary Builder* uses research-based principles of memory building and reading comprehension to teach 10-20 words per lesson. For each word, the learner sees and hears three uses of the word in the context of full sentences. With a single click, the learner can see each word and its definition, along with information about the word's origin and parts. The learner also has an opportunity to add a meaningful "memory jogger" (mnemonic device) for each word. The learner has an opportunity to preview and study each list, then practice it until all words are mastered. Finally, there is a test on the list.

Note: The *Vocabulary Builder Editor* is available separately. This tool allows instructors to construct their own vocabulary teaching exercises in the same structure as *Vocabulary Builder*. This is especially useful for readers who are required to master specialized or technical vocabulary, or for learning graded vocabulary lists.

Reading for Information

Curriculum Structure

Reading for Information consists of six courses with a total of 49 modules. Most modules contain tutorials, applications, and mastery tests; the final module in each course is a challenge activity.

Listed below are the courses and modules, each with their terminal objective and a brief description. This unique modularity allows the instructor to plan individual programs based on specific needs. For example, if a learner does not read reports, the instructor can easily create a program that omits the course on reports. However, note that the modules build upon each other; thus, it is strongly recommended that learners take them in order, especially in courses 5 and 6.

1. ***Messages (4 Modules + Challenge)***

   Learners study how to identify the stated and implied receiver, sender, topic, and purpose. In addition, they learn strategies to find missing information when they receive messages in which they cannot identify all the common parts. They learn how to determine the action called for by a message, who will perform it, and when it should be completed. They conclude with summary of the strategy and a Message Challenge.

2. ***Reading Business Letters (6 modules + Challenge)***

   Learners study the basic parts of a business letter. They discover that they can quickly find the purpose and topic of a business letter by asking themselves why the letter was sent to them and what the letter is about. Then they learn how to gather details. Next, they learn how to figure out what action is required by the letter. Learners also study the steps to take when they do not understand a word, phrase, or acronym in a letter. Finally, the learners summarize and apply the five-step strategy to reading a letter. They conclude with the Reading Business Letters Challenge.

3. ***Reading Reference & Technical Material (11 Modules + Challenge)***

   Learners find out how to use a table of contents. Then, after studying alphabetization, they learn to use a glossary and index. They learn how to select the type of reference they need, then practice finding what they need in a book by selecting the right strategy, then locating details using the strategy. Special issues taught include how to use two or more references, and how to read symbols, keys, and legends. Finally, the entire reading strategy is summarized and applied, and learners conclude with a Challenge activity.

4. ***Reading Directions (8 modules + Challenge)***

   Learners study how to identify the steps, substeps, and sub-substeps of a sequence (set of directions). They also learn about various numbering schemes and block text directions. Learners discover how to distinguish between actions ("turn the wrench") and supporting details ("one-half turn").They then learn about sequences of steps, if-then logic in directions, and about maps, floor plans and diagrams. Finally, they learn about cause and effect in directions. The entire strategy is summarized, then the learners take another Challenge.

5. ***Reading Forms (6 modules + Challenge)***

   Instruction begins by introducing forms and their different parts. Learners focus on finding information on simple forms, then on complex forms. Learners also focus on locating and using the directions for a form to check if all the fields on a form are filled in correctly. Learners look at a variety of forms in order to determine if information matches. They also study how to pull together information from more than one form to answer questions such as, "How has production changed over time?" The course concludes by summarizing a strategy for reading forms, then providing a Challenge for practice.

6. ***Reading Reports (8 modules + Challenge)***

   Learners study the parts of a report—cover letter, summary, section titles, and conclusion—and the purpose for writing a report. They also learn how to determine whether they should read a specific report. Then, they learn to evaluate cause and effect in reports. When looking for a comparison, learners learn to look for how things or situations are similar and different. Learners discover how to read a report in order to locate the main points. Then, they see how to identify a claim and the details that support it. Learners are taught how to paraphrase parts of a report, then what to include in a summary and how to organize it. The course concludes by summarizing a strategy for reading reports, then provides a Challenge for practice.

Instructional Design

Reading for Information has four types of learning activities:

Tutorials teach learners a specific skill—for example, identifying the purpose of a short message. Each tutorial includes an introduction, and a number of cycles of explanation, example, and practice with feedback. Overviews and summaries convey structure of knowledge. Motivational themes are embodied throughout.

Applications allow learners to practice applying reading skills using workplace examples.

Mastery tests evaluate comprehension, monitor progress, and record performance for an individual at the module level. After successful completion of a mastery test, the learner sees an online certificate of completion with his or her name.

Challenges give learners practice using reading skills within a self-imposed time limit. This emphasizes the importance of being accurate *and* quick in the work

place, and encourages learners to become more accurate in estimating the time they need to complete a set of tasks.

Advanced Reading Strategies

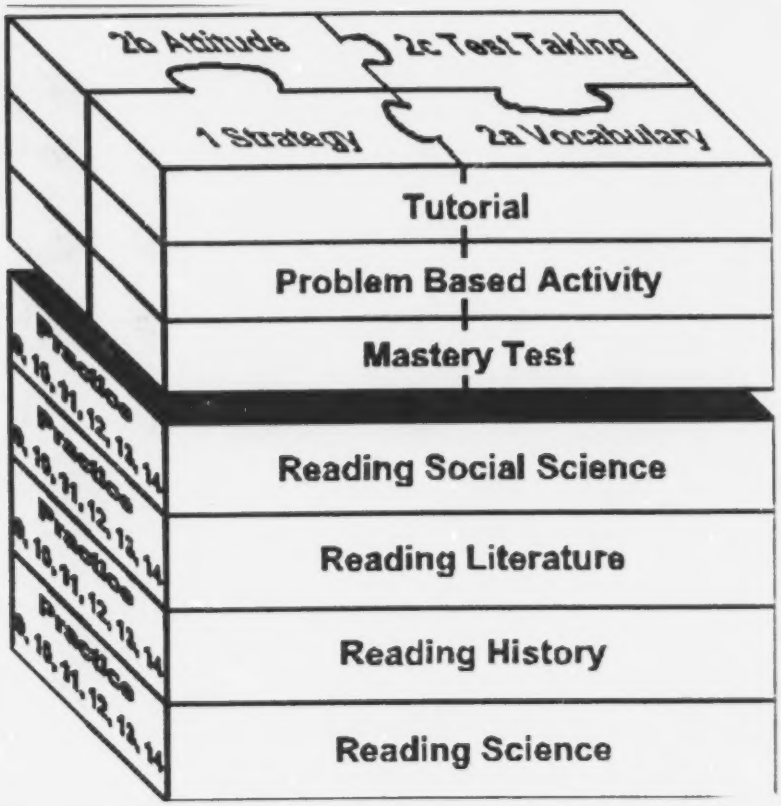
Curriculum Structure

The higher the level of reading skills that the learner is to build, the more important it is to integrate and adapt general comprehension strategies with the subject matter. For example, an elementary-level task such as finding the main idea of a paragraph works the same way whether the text is from a physics text or a psychology text. However, if the task involves taking notes on a whole chapter and preparing for a test, the skills become much more content-dependent. Reading and studying both subjects would probably involve answering questions on theory, but studying the physics chapter also would involve preparing to work exercises or problems applying the theory. Learners typically don't make these adjustments in strategy on their own.

However, the various content-specific reading strategies all have in common that they are question-based. This means that the central skill in reading comprehension is being able to generate appropriate questions to be answered by the text, based on the purpose to be accomplished (problem to be solved) by the reading task. What changes from subject to subject is the type of question the learner is to answer and the resources commonly available to the reader in the text itself. For example, consider an account of a political rally. In a literature course, the comprehension questions might center on the plot elements (such as "what was the conflict?" and "who were the characters?"), and the text itself would probably be a single narrative stream (a story). In a history course, the same account might use comprehension questions centering on the political and economic forces at work (such as "why did this rally happen?" or "what were the speakers protesting against?"), and the text itself might be an historical account, presented with subheadings, cross-references to other historical events and terms, and perhaps a chart or graph showing related social or economic data to elaborate on the context

of the event. These examples show that reading comprehension at this level is a complex problem-solving task which requires the learner to generate specific questions based on the reader's existing understanding of the content, the type of document, and the specific purpose of the reading task, as well as a general comprehension strategy.

The design of *Advanced Reading Strategies* recognizes this requirement by first introducing reading comprehension as a question-based problem-solving strategy. Then it quickly moves to content-specific comprehension strategies and practice with representative tasks. This figure shows the relationships among the ARS curriculum modules and activities.



The top block shows how courses 1 and 2 are linked together to solve the puzzle of reading instruction needs for students in grade 9 through the second year of college. Course 1, in particular, is the "base" of the curriculum and should be studied by all learners[6]. Note also that the "reading in the content areas" courses are intended to be selected independently of one another and added as complements to their respective content curricula. Thus, practice is relatively limited in size, but difficulty extends well into the post-secondary level. This

[6] Learners preparing for the GED may find course 2 sufficient when combined with practice at grades 9-11. Course 1 is helpful, but may be optional.

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allows instructors in secondary and post-secondary settings to select and assign practice at a level which corresponds to their course's reading requirements.

Course 1: A Reading Strategy

The first piece of the puzzle *1. Strategy* represents Course 1 "A Reading Strategy", the overall strategy for reading and study skills. This piece is more complex than the figure shows, as it includes four tutorials, four mastery tests, and five problem-solving activities, to ensure a strong foundation for what follows. All learners should begin with Course 1.

In the four-step reading strategy, the learner:

1. practices identifying text aids, patterns and controlling ideas by finding resources.
2. discovers how to form good questions by using text aids.
3. studies how to find answers in a single or multiple paragraph format.
4. practices highlighting, underlining, note taking, and table building when preparing for a review.

Modules A through D consist of a tutorial, a problem-solving activity (PSA), and a mastery test for each step of the reading strategy. Module E contains one problem-solving activity that reviews all four steps. The table below summarizes the activity types included in each module.

ACTIVITY TYPES FOR MODULES IN COURSE 1

Module	Activity Types
A. Finding the Resources	tutorial, problem-solving activity, test
B. Asking Questions	tutorial, problem-solving activity, test
C. Finding Answers	tutorial, problem-solving activity, test
D. Preparing for Review	tutorial, problem-solving activity, test
E. Putting It Together	problem-solving activity

Course 2: Building Reading Skills

Course 2 teaches three supporting skills. While the skills are important, instruction in them may not necessarily be needed by all learners.

In the block diagram above, Module *2a, Vocabulary*, represents the *Building Your Vocabulary* module in Course 2 "Building Reading Skills". This module includes the first use of PLATO *WordBank* and also teaches learners ways to get the

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meaning of a word from context and to build their vocabulary when WordBank is not available.

Inclusion of direct vocabulary instruction is somewhat controversial. The weight of research shows clearly that formal vocabulary-building programs have limited value in boosting reading comprehension. Vocabulary lists can cover only a fraction of the words readers actually need to know, and unless the words are immediately used in context, the forgetting curve is very steep.

However, we believe there are three important benefits for doing some vocabulary training. First, many reading instructors have found that vocabulary instruction can be quite valuable in changing learners' perceptions about their potential as readers. Difficult words can be learned quickly, unlike many other reading skills which take more time to develop. Learning hard words gives learners a sense of progress and accomplishment which often spills over to other areas of reading development. Second, there are some skills, such as figuring out the meaning of a word from context and knowledge of word parts, which are retained and transfer well. Third, research has consistently shown that vocabulary is a good predictor of achievement on standardized reading tests.

A *WordBank*[7] activity in this module is designed specifically to model the generalizable vocabulary-building skills, so that the learner will continue to use them in general reading. This module therefore is probably of use to all learners who need to build these generalizable vocabulary-building skills, and those who need practice with the specific words taught. The 40 words in the vocabulary list are often found on the *Scholastic Aptitude Test*.

The diagram piece labeled *Attitude* represents the module *Reading to Remember*. This module is especially helpful for the student who may have had trouble learning to read and thinks that he or she will never be a strong, competent reader. As the module makes clear, there are ways for all readers to increase their reading skills.

The diagram piece labeled *2c*, *Test Taking*, represents the *Doing Your Best on Reading Tests* module that teaches students how to handle three common standardized test item types. With specific instruction and timed practices, this module can help students with anxiety about standardized tests build a better foundation for those tests.

Each of these modules is quite extensive, and represents one or more tutorials, problem-solving activities (PSA's), and mastery tests.

Content Area Courses

The bottom blocks of the puzzle are the courses that focus on reading in the specific content areas of social science, literature, history, and science. Each of these courses recapitulates the first four pieces, providing reinforcement and extra practice of the skills already taught.

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[7] *Word Bank* is equivalent to *Vocabulary Builder* in *Vocabulary and Reading Comprehension*, but has a different look and feel and some minor functional differences.

The structure of each of the courses is the same. They should be prescribed after Course 1 and any selected modules from Course 2, but in any order relative to each other. They are designed to be added as complements to courses in their respective curricula.

- Module A in each course deals with vocabulary specific to the subject area. A tutorial and test deal with issues, such as the formation of scientific terms, that help the student build his or her vocabulary in that area. *WordBank* teaches 40 words that will be useful in each subject area using the strategy learned in module 2a.
- Module B in each course provides special content, beyond the basics, relevant to reading in the subject area.
- Module C in each course recapitulates the strategy taught in course 1, then adds specific techniques to use when reading in the subject area.

The 9th through 14th grade reading level practices in each course provide opportunities to tackle passage comprehension questions in preparation for standardized tests as taught in module 2c. We expect that most instructors will not assign all six practices to any one learner, since it is unlikely that a single learner will progress from reading levels 9 to 14 in a single year. Instead, instructors should assign only those levels of practice which are appropriate for each learner.

Instructional Design Strategies

The instructional strategies implemented in the computer software of ARS represent numerous advances in the state of the art of instructional design for the computer. For example:

- Exploiting fully the capabilities of the Windows environment, realistic interaction types have been created which involve text annotation via a simulated highlighter, and circling and underlining with a simulated pen.
- Both practice tasks and feedback have been carefully designed to support the multi-step cognitive processes being taught. These often include goal definition, question formation, search and inference.
- An audio-active glossary provides pronunciation and definition help with words which are likely to be unfamiliar or which are used with meanings other than the most common.
- *WordBank*, a vocabulary tutor, models a generalizable strategy for learning vocabulary words, while it directly teaches sets of words which are commonly found on college entrance examinations and similar tests. The strategy involves analyzing the word for its components, inference of meaning from 3 examples of use of the word in context, and use of mnemonics. A well-validated list learning strategy shuffles the "flash cards" and presents them in a short list sampled and sequenced randomly with replacement (until answered correctly) from a pool of 40 words. Practice continues until all words are

mastered. *WordBank* is accompanied by a tutorial which explains the vocabulary inference strategy.

- *The American Heritage Dictionary* is integrated into the course and can be used to look up definitions of any on-screen word simply by right-clicking on it.
- The curriculum includes realistic reading comprehension practices at six grade levels, using 72 reading passages of 500-1,500 words in length. Many more passages are at approximately grade 10 are used in tutorials, PSA's and tests, with lengths ranging from 50 words to 700.
- Many science passages involve combinations of text and non-text document components, including charts, illustrations, and tables. In all content areas, text components such as headings and layout cues are taught using realistic examples.
- Passages are carefully graded using the *Flesch-Kincaid* method to span an approximate grade level range of 9 through 14. Passages are sequenced from least to greatest difficulty. Instructors should realize, however, that reading level is a complex phenomenon which is strongly influenced by topic familiarity and interest. Readability formulas provide only an approximate indication of actual passage difficulty for any given learner. Also, note that since these courses are designed to be integrated in a complementary role into their respective content courses, sufficient practice is included to provide initial learning of each strategy. It is assumed that fluency will come as a result of normal study in the content area.
- Content of passages has been carefully selected to be representative of the content areas and motivating to adults and young adults.

Teaching with PLATO Reading

The PLATO reading curricula are designed to be a comprehensive on-line solution for remediation of reading from initial decoding through the post-secondary level. It is also useful for teaching age-appropriate reading comprehension strategies at the secondary level. Because its structure is modular and flexible, instructors have a wide range of options for integrating the PLATO courseware into their curricula. In this section, we'll discuss some of the key questions concerning use of PLATO reading by itself, or as part of a larger language arts curriculum. For further discussion of instructional models and strategies for integrating PLATO into your curricula, see *Technical Paper #6.*

Should I do all my reading teaching on-line?

Because of the nature of reading, we strongly recommend that your curriculum should also include off-line activities. *Fundamental* and *Intermediate Reading Strategies* have worksheets keyed to specific modules, which you or the learners can print out and use as a "bridge" activity to off-line reading. In addition, we recommend that you assign books with high interest value for your learners, and do reading aloud activities as appropriate to your goals. So, at each skill level, we expect this sequence of practice will work best:

Individualized Placement → PLATO Online Tutorials → PLATO Online Practice → PLATO Online Module Mastery Tests → PLATO Offline Worksheets → Offline Reading of Books and Other Materials

This extended offline practice is especially important because of the need to build *automaticity*– the ability to perform tasks with minimal cognitive load ("without thinking about it"). This frees up cognitive resources for use on higher-level challenges. Research has shown that building automaticity takes extensive practice – over 100 hours per grade level, in reading. Thus, any well-balanced reading program should include considerable free-reading practice at appropriate levels of challenge.

I only have 8 computers in my classroom, and there is no lab. How can I use PLATO reading?

You can organize your class into activity groups which rotate among on- and offline activities. For example, a group of learners might work for one period online, then in the next period move to a PLATO printed worksheet, then in the next period move to assigned or free reading of books, perhaps with an assignment to write a summary or interpretive essay. You can organize all these activities through PLATO *Pathways*, so the computer automatically tracks progress and

makes prescriptions for each individual learner. You'll also want to make your computers available outside of class hours, so learners who need to work more slowly can do so. Also, consider having learners work on the PLATO lessons on their home computers, via the Internet, as a way of increasing schedule flexibility and instructional time.

What should my role be?

Be a "guide on the side." Let the learners work with PLATO, using a combination of solo work and peer tutoring (except for tests!). Watch to see that they are using the skills being taught, and ask them open-ended questions designed to direct their attention to the relevant skills.

Individualize assignments, using the many powerful placement and prescription tools available in PLATO (see below).

Use the PLATO detailed reports (especially the exception reports) to identify daily those learners who are having problems. Focus on learners who are progressing slowly, or those who have an abnormally high number of tries on a given activity, or those whose time on task is abnormally low. Each day, intervene proactively with the learners who are having these problems. In *FRS* and *IRS,* have learners print out their Workbook activities and turn them in daily so you can review the way they are using each reading strategy.

How can I reinforce the cognitive strategies PLATO teaches?

In off-line practice, model the strategies using the same "think aloud" techniques used in the *Reading Strategies* lessons. Also, be sure to ask questions which require inference ("why?" and "prediction" questions) as well as occasional facts ("what?" questions).

In your off-line reading instruction, balance the "top down" emphasis on cognitive strategies (preferably the ones used in PLATO) and metacognition with the "bottom up" emphasis on decoding and parsing words, phrases, and sentences. You should model both kinds of work, and ask your learners to engage in both as they read anything.

Note that the cognitive strategies are often selected based on the purpose for reading. Therefore, make sure that your learners always know their purpose when you assign (or they select) any reading task.

My adult learners are very unskilled readers. Should they start with Phonics?

Research on adult and young adult readers has shown that only very few (less than 5%) of these learners actually have problems with initial decoding and need phonics teaching. Furthermore, the widely-used standardized reading tests for adults have been criticized for poor reliability at very low skill levels, so you may not have good test evidence of their true starting level. As a general rule, it's probably wise to assign phonics instruction only for particular individuals after you have evidence that they really need it.

OK, then I'll start everyone with Essential Reading Skills, right?

ERS 1 is designed for "spot" remediation by your native English speakers. If your learners speak grammatically, then they already know the rules of English

grammar, even if they can't state them. It may well make sense for your level 4 readers to start with *ERS2*, which first introduces comprehension strategies.

Can I use PLATO reading with my ESL/LEP learners?

The PLATO reading curricula aren't designed specifically as a complete solution for ESL/LEP use, but we have included many features which will make the courseware useful for these learners as part of their ESL curriculum. For example, audio, with replay, is available in most courses[8]. The on-line dictionary allows learners to look up any word. And, the PLATO *Vocabulary Builder* provides vocabulary practice. If you use the *Vocabulary Builder Editor*, you can add your own additional vocabulary teaching to support other curriculum activities.

Can I use PLATO reading with my LD learners?

The PLATO reading curricula aren't designed specifically as a complete solution for learning disabilities, but many of the principles of instructional design used in PLATO are based on the same learning theory as recognized teaching techniques for the learning disabled. Consequently, LD teachers will find the self-paced structure, small steps with immediate feedback, and extensive practice to be particularly useful with LD learners. However, the lively multimedia design of PLATO may not be appropriate for all LD learners, so be sure to review lessons before including them in individual learning plans (ILP's).

Do I have to use the PLATO modules in their published order?

In general, the answer is "no." As with all PLATO curricula, we strongly recommend that you carefully select all learning activities relevant to your state and local curriculum standards. Many such alignments are available from PLATO, and training is available to show you how to build your own and incorporate additional off-line activities.

Reading as a content/skill area is not particularly sequential in structure, so any sequence which makes logical sense to the learner will probably work. The curriculum is in a "spiral" structure, with cognitive strategies introduced in *ERS2*, then progressively elaborated in *Fundamental Reading Strategies* and again at a higher level in *Intermediate Reading Strategies*. Related cognitive strategies for reading in the content areas are in *Advanced Reading Strategies*. Reading levels have been carefully controlled and labeled throughout, so make sure you prescribe reading levels which match those of each of your learners. If a learner is having difficulty with a strategy, you can find a simpler approach, at a lower reading level, in the preceding curriculum.

How should I place my learners in PLATO?

There are a number of options for placement. Each option has its own tradeoffs of power and convenience. These are summarized in the table below.

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[8] In *ERS1* and *ERS2*, a combination of "read the screen" audio and audio-only instruction is used. In *VRC*, all instruction is in audio, but the instructor can turn on pop-up text as well. In *FRS* and *IRS*, instruction is in audio (and includes partial reading of passages where necessary to instruction). In *ARS*, vocabulary lessons include audio. *RF1* does not use audio.

Placement Testing Strategy	Advantages	Disadvantages
External standardized reading test	Valid—referenced to generally recognized skill model or state curriculum standards Usually norm-referenced Best reliability May be needed for program requirement to report gains (e.g., by grade level)	Time consuming Costly Exemptions set manually May not precisely test all skills in PLATO
FASTRACK[9]	Criterion-referenced Uses "tailored testing" for greater reliability with shorter test length. Short; least time-consuming Automatically sets exemptions	Fair reliability when compared to standardized tests Useful only for placement
Module Mastery Tests	No time spent on individual pretesting or prescription: everyone starts at the same place Allows computer to dynamically adapt to learner performance as study occurs Most reliable assessment inventory of each individual skill Automatic	Learners must spend considerable time taking tests they will see as "easy" before reaching their skill level Learners can "cheat" by repeatedly retaking the test, unless you limit number of tries via PLATO Pathways.
Your own judgement calls based on your own records from your own tests and assignments	Simple – just set exemptions manually	Least reliable, unless you know the learner and PLATO curricula in great detail, or you have carefully developed your own placement tests and aligned them to the PLATO alignment you are using.

I teach integrated language arts. How can PLATO's reading help?

PLATO's reading curricula include a number of structured writing activities. In the *Reading Strategies* curricula, learners take notes to practice each cognitive strategy, using questions and prompts which scaffold each strategy. The offline activities involve additional structured writing. Some of the cognitive strategies,

[9] Note: a new version of FASTRACK (name to be determined) for reading, keyed to the new reading curricula and with additional features, is planned for early in 2001.

such as *summarizing,* are particularly useful in writing instruction. In addition, *Advanced Reading Strategies* has a Problem Solving Activities which include simulated writing activities. Throughout all curricula, the PLATO student Notebook is available for cumulative note-taking. You can use PLATO *Pathways* to insert your own writing assignments at any point in the curricula, and to launch a word processor. The learners then can print the contents of their notepads and turn them in to you on a regular basis.

Appendix A: Consultants

Development of modern multimedia instruction is a complex, multidisciplinary undertaking. In the PLATO Product Development Methodology, specialists in instructional design, software programming and testing, graphic arts and multimedia, and project management work extensively with PLATO clients, nationally-recognized authorities in the content being taught, and actual learners. Principal advisors for this curriculum are Drs. Mike Graves and Rosemarie J. Park, both of University of Minnesota. We also would like to gratefully acknowledge the support of all our advisors, who for various curriculum projects included:

Pat Carrol, District Supervisor for Language Arts, Pennsauken School District, Pennsauken, NJ

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Pat Fahy, PLATO Learning (Canada), Ltd.

Judy Griggs, Long Beach, CA

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Betty Outten, Long Beach School for Adults, Long Beach, CA

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Teaching Reading with PLATO

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Appendix B: Reading Products Discussed in this Document

Product	First Publication Date	Grade Level(s)	Skills	Strategies	Comprehension Practice	Vocabulary Development	Academic context	Adult life context	Workplace context	Study skills	Test-taking skills	Audio support options	Timed practice	Printed activities
Reading for Information	1996-97	7-9	✓	✓				✓	✓				✓	
Advanced Reading Strategies	1998	10-14	✓	✓	✓	✓	✓			✓	✓	O		
Vocabulary Builder Editor (Instructor Tool)	1999	All				✓						O		
Essential Reading Skills	2000	3-4	✓	✓		✓		✓				R		
Fundamental Reading Strategies	2000	5-6		✓		✓	✓	✓	✓	✓		R		✓
Intermediate Reading Strategies	2000	7-9		✓		✓	✓	✓	✓	✓		R		✓
Vocabulary and Reading Comprehension	2000	3-9			✓						✓	O		

Note: a third-party phonics product for adult beginning readers also is available.